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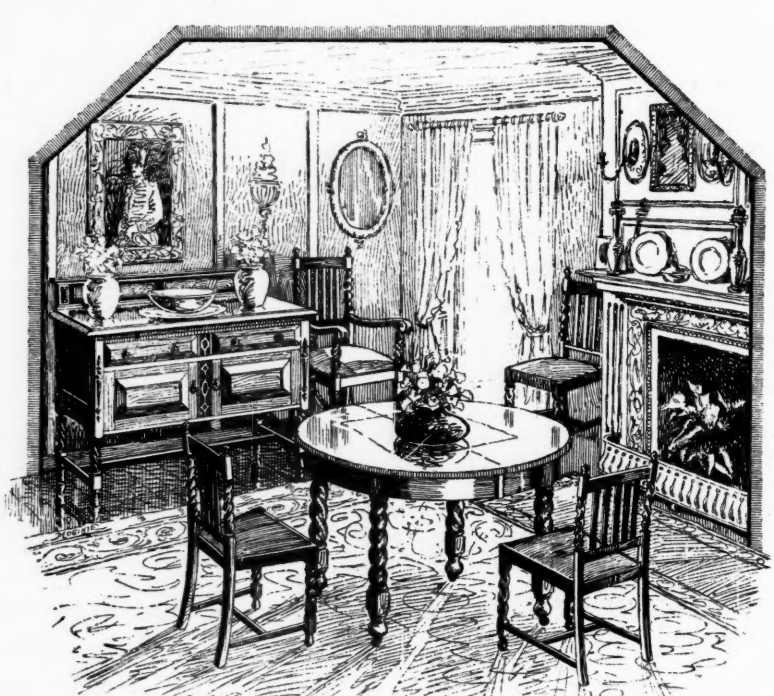

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ON HUMAN ISO-HÆMAGGLUTININS, WITH A NOTE ON THEIR DISTRIBUTION AMONGST SOME AUSTRALIAN ABORIGINES.[1]

BY A. H. TEBBUTT, D.S.O., B.A., M.B. (SYDNEY), D.P.H. (OXFORD),

Honorary Director of the Pathological Department, Royal Prince Alfred Hospital, Sydney;

AND

SARAH V. MCCONNEL,

Royal Prince Alfred Hospital, Sydney.

Introduction.

ISO-HÆMAGGLUTININS are more commonly known simply as iso-agglutinins. From one point of view hæmagglutinins may be classified into two main groups: (*i.*) iso-agglutinins which agglutinate the red blood cells of one race or series of individuals and not other races within the same species and (*ii.*) hetero-agglutinins which agglutinate the red blood cells only of certain other species. Both these main groups may be either natural or normal to the race or species or, on the other hand, they may be "acquired" or artificially produced by inoculation.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on November 25, 1921.

Natural or normal iso-agglutinins are apparently rare in the lower animals, whilst they have been found in every race of man investigated, though the number of races yet reported upon in this connexion is comparatively small. They are just as characteristic of man's serum as the antigenic properties thereof from which precipitins are prepared. As far as we are aware iso-agglutinins have not been produced artificially in man.

Though iso-agglutinins are rare in lower animals, so that one cannot, as in man, differentiate a species into different groups (so-called biochemical races), still attempts have been made with some success to obtain such differentiation by the artificial production of iso-agglutinins. Ludwig and Hanka Hirschfeld[(1)] quote Ehrlich as having made such differentiation in goats, whilst von Dungern and L. Hirschfeld,[(2)] by injection of the blood of dogs into other dogs, found that there were two antigenic constituents (iso-agglutinogens) in dogs' corpuscles which we shall designate *P* and *Q* to avoid confusion with the symbols used in man (*A* and *B*). The corpuscles of some dogs contained *P*, others *Q*; others contained both *P* and *Q* and others neither *P* nor *Q*. The corresponding agglutinins *p* and *q* were not present, but after inoculation of the blood of each variety separately into all four varieties, agglutinins were produced as shown in Table I..

TABLE I..

Dogs Used for Injection.	Dogs Injected and Agglutinin Produced.			
	Group I., containing *P*	Group II., containing *Q*	Group III., containing *P* + *Q*	Group IV., containing Neither
Group I., containing *P*	Nil	*p*	Nil	*p*
Group II., containing *Q*	*q*	Nil	Nil	*q*
Group III., containing *P* + *Q*	*q*	*p*	Nil	*p* + *q*
Group IV., containing Nil	Nil	Nil	Nil	Nil

It will be noted that there is a remarkable similarity between these acquired iso-agglutinins produced in dogs and the natural iso-agglutinins occurring in man. It would appear from the work of von Dungern and Hirschfeld that these hæmagglutinogens in dogs are inherited in some such fashion as is found in man. That the racial peculiarities, *e.g.*, bony structure, musculature, etc., do not correspond with this biochemical grouping is another interesting and at first sight a puzzling feature, but can, we think, be explained on the hypothesis derived from modern theories of heredity, *viz.*, that these anatomical characters are inherited quite separately from the biochemical characters.

These workers also demonstrated the presence of agglutinins for human corpuscles in the sera of various lower animals (natural hetero-agglutinins) and showed that if the common agglutinins for all human corpuscles were first absorbed, there were revealed specific agglutinins for the different human groups. Human blood could be classified by this method in much the same way as with human serum. It was found that if an animal's serum contained no agglutinin for human Group III. corpuscles, injection of cells of this group produced the corresponding agglutinin. It is curious to note that in several chimpanzees only the Group II. agglutinogen (*A*) was found.

Classification.

After this preliminary discussion disclosing the wide distribution in mammalian red blood cells of agglutinable substances and in the sera of agglutinins, revealing also the fact that after a very comprehensive research on dogs' blood, von Dungern and Hirschfeld were able to disentangle the iso-agglutinogens, we shall briefly review the iso-agglutinins of man. We can scarcely excuse ourselves for so doing, since in not a few very recent publications attention has been drawn to this subject, but we have continued to write this paper because certain misconceptions have been common and because we have carried out some work *inter alia* on the mechanism of inheritance before we were aware of von Dungern and Hirschfeld's work on this aspect.

Jansky's classification[3] of human iso-agglutinins has precedence over the better known classification of Moss,[4] though it seems rather a pity that von Dungern and Hirschfeld's classification, in which the antigenic constitution of the groups was accurately revealed (1910), has not been adopted. Table II. shows the development of the classification.

TABLE II.—CLASSIFICATION OF HUMAN BLOOD GROUPS.

Landsteiner 1901	Jansky 1907	Sera I.	II.	III.	IV.	Moss 1910	Von Dungern and Hirschfeld 1910
	Corpuscles						
I.	I.	—	—	—	—	IV.	*O*
II.	II.	+	—	+	—	II.	*A*
III.	III.	+	+	—	—	III.	*B*
	IV.	+	+	+	—	I.	*AB*

L. and H. Hirschfeld state very concisely the agglutination results set out in the above table by defining what they have called Landsteiner's law of iso-agglutinins:

> There are present in human blood two agglutinable properties which, however, are not equally marked in all individuals. In the serum there is never present an agglutinin reacting with its own blood, but always an agglutinin which reacts with that property which is absent in that particular blood.

In Group *O*, therefore, are both agglutinins α and β, in Group *A* is one agglutinin β, in Group *B* one agglutinin α and in Group *AB* no agglutinin. This explanation was recently confirmed by H. Schütze[5] in a series of absorption experiments. As might be expected, there are quantitative differences in agglutinin content in different individuals. It is even stated by von Dungern and Hirschfeld that there are some rare individuals belonging to Group III. (*B* group) whose sera (containing α agglutinin) agglutinate the red cells of more individuals than other Group III. sera. It may be inferred that this serum, if used for classification, would make Group II. slightly larger, but in doubtful cases an examination of the serum as well as the corpuscles should disclose the group. Apparently cross-agglutination does not reveal any doubtful cases.

The Relative Proportion of the Four Groups.

It is certain that these agglutinable substances and their corresponding agglutinins appeared comparatively early in the history of man. One fact pointing to this is their presence in the Australian aborigines. As we shall see, the agglutinable substances appear earlier than the agglutinins in infants and it is probable that the former preceded the latter in evolution. Reference has been made to the finding in dogs of agglutinable substances without iso-agglutinins. Whether *A* preceded *B* it is not possible to infer with the available evidence, but at the present time, when a race is examined, the relative proportion of these substances has become fixed. The relative percentage has become stabilized by the action of Mendel's laws. L. and H. Hirschfeld showed, however, that the proportion varied widely in different races and therefore it is obvious that the percentage will only remain a constant as long as there is no inter-marriage with individuals of another race of a different group percentage. It is curious to note that Moss's figures for one hundred people living in Baltimore, which have often

been reproduced, contain an error due to small numbers. Moss's percentages, based on von Dungern and Hirschfeld's classification, are $A = 40$, $B = 7$ and $AB = 10$. But as AB can only occur when A and B come together, AB must be less than either A or B. We have found this to be the case in every published report to which we have had access, including sixteen races by L. and H. Hirschfeld; it is also the case in 405 Australians (whites). Our figures are Group I. (O) = 51.4%, Group II. (A) = 36.0%, Group III. (B) = 7.9% and Group IV. (AB) = 4.7%.

The method of grouping employed was to take the blood into test tubes containing 3.8% of sodium citrate solution, in which the corpuscles were washed simply by shaking and allowing to settle in an ice-chest. The supernant citrate solution was poured off and the corpuscles mixed with physiological saline solution in a dilution of approximately 1 in 50 to 1 in 100. Known II. and III. sera were mixed with the corpuscles on a glass slide and the readings were checked under the microscope after about five minutes. Thorough mixture of serum and corpuscles was insured. Our Group II. is smaller and Group I. larger than the Hirschfelds' figures for the English. We do not regard our percentages as final. Additions to them are highly desirable. The examination of the blood of near relatives was avoided as far as possible. Portion of the Hirschfelds' table for various races is here reproduced:

TABLE III.—RACIAL DIFFERENCES.

(Modified after L. and H. Hirschfeld.)

Type.	Race.	Group I. (O)	Group II. (A)	Group III. (B)	Group IV. (AB)	Biochemical Index $\frac{A}{B}$
European Type	English	46.4	43.4	7.2	3.0	4.5
	French	43.2	42.6	11.2	3.0	3.2
	Italians	47.2	38.0	11.0	3.8	2.8
	Germans	40.0	43.0	12.0	5.0	2.8
	Austrians	42.0	40.0	10.0	8.0	2.6
	Serbs	38.0	41.8	15.6	4.6	2.5
	Greeks	38.2	41.6	16.2	4.0	2.5
	Bulgarians	39.0	40.6	14.2	6.2	2.6
Intermediate Type	Arabs	43.6	32.4	19.0	5.0	1.5
	Turks	36.8	38.0	18.6	6.6	1.8
	Russians	40.7	31.2	21.8	6.3	1.3
	Jews	38.8	33.0	23.2	5.0	1.3
Asio-African Type	Malayasies	45.5	26.2	23.7	4.5	1.09
	Senegalese	43.2	22.6	29.2	5.0	0.8
	Annamese	42.0	22.4	28.4	7.2	0.8
	Indians	31.3	19.0	41.2	8.5	0.5

The biochemical index is the proportion of Group II. and Group IV. added together to Group III. and Group IV. added together, in other words

$$\frac{A \text{ in Groups } A \text{ and } AB}{B \text{ in Groups } B \text{ and } AB}$$

These figures are reproduced in order to show how interesting are the figures so far obtained in Australian aborigines. These aborigines were at the time residing at stations controlled by the Aborigines Protection Board and on Government reserves. They were all within a few miles of the coast of New South Wales, between La Perouse, on Botany Bay, and Wallaga Lake, about two hundred miles to the south. Blood was taken into 3.8% citrate solution and examined locally by one of us, usually within twenty-four hours. The supernatant citrate solution was poured off, the corpuscles shaken up with salt solution and the same Group II. and Group III. sera used as were employed in grouping our specimens of Australian blood. A certain amount of hæmolysis had occurred in some cases before grouping, owing to bacterial contamination associated with hot weather and the shaking the tubes received in transport by road. This probably did not affect the results, because the sera of a number of individuals were examined and always agreed with the results obtained with the corpuscles. A microscope was not employed, except in the La Perouse cases, readings being taken with the naked eye, assisted by a hand lens giving a tenfold magnification.

In the tabulated results only full bloods and crosses with Europeans are shown; crosses with negroes, South Sea islanders and Chinese were discarded. Nearly all the crosses are aboriginal-British.

Table IV. shows the geographical distribution of the blood groups and Table V. the distribution in the different castes.

TABLE IV.—GEOGRAPHICAL DISTRIBUTION (JANSKY'S GROUPS).

Locality.	I.	II.	III.	IV.	Totals.
La Perouse	30	17	1	0	48
Port Kembla.. ..	6	6	0	0	12
Greenwell Point ..	1	3	0	0	4
Moruya	3	0	0	1	4
Wallaga Lake ..	23	14	1	0	38
Bateman's Bay ..	7	4	2	0	13
Huskisson	11	10	0	1	22
Totals	81	54	4	2	141
Percentage ..	57	38.5	3	1.5	100

TABLE V.—DISTRIBUTION IN THE CASTES.

Cast.	I.	II.	III.	IV.	Totals.
Full Bloods	6	6	0	1	13
Three-Quarter Aboriginal	16	10	0	1	27
Half Aboriginal ..	48	26	2	0	76
Quarter Aboriginal	11	11	2	0	24
One-Eighth Aboriginal	0	1	0	0	1
Totals	81	54	4	2	141
Percentage ..	57	38.5	3	1.5	100

There were only thirteen full bloods in the 141 examined; of these, three belonging to Group II. were brothers. Counting only one of these, we have eleven full bloods in whom the distribution is Group I. = 6, Group II. = 4, Group III. = 0, Group IV. = 1. No Group III. was found, but the B agglutinogen was found in the one member of Group IV.. The sera of all these full bloods were tested against

Group II. and Group III. corpuscles and agreed with the corpuscle readings.

It will be noted that one result of crossing aborigines with Europeans (mostly British) is a reduction of the Group III. percentage in Australians from 7.9 to 3. The inference that Group III. is rarer amongst aborigines than amongst white Australians is permissible, subject to two possible errors. Firstly, there are errors due to small numbers and, secondly, errors due particularly to inbreeding. In the course of conversation with these aborigines it was noted that a considerable number appeared to be related to each other. It is to be hoped that in other parts of Australia the aborigines will be grouped as soon as possible, so that such errors may be corrected. Accurate statistics may be of considerable ethnological value. Until many other races have been examined from this aspect, it will be impossible to gauge accurately the importance of the biochemical index as compared with anatomical features such as the cephalic index. If our small figures are even very approximately accurate, then the Australian aboriginal has a biochemical index more akin to the western European type than any race between Australia and western Europe yet reported upon.

The Age at Which the Agglutinable Substances and Agglutinins Appear in the Individual.

There is some misconception apparently in this connexion. In THE MEDICAL JOURNAL OF AUSTRALIA, November 26, 1921 (page 483), for example, Brian H. Swift[6] states that "the risk of incompatibility of the mother's blood has been investigated by Happ. He found that in infants up to one month old this did not apply." On the contrary, we hold that no transfusion should ever be done without a preliminary test, whether in infants or in adults. Happ[7] concludes, in fact, that "on account of the differences between the agglutination reactions in the blood of mother and child it is not safe to transfuse an infant from its mother without making the preliminary tests." From Happ's tables we find that of twenty-four infants under one month old fourteen possessed corpuscles containing agglutinable substances and of these eight were agglutinated by their own mother's serum, whilst one agglutinated its mother's corpuscles and two other possessed agglutinins. We would suggest that in transfusions the corpuscles of the patient or recipient be first examined and a donor of the same group used if possible in preference to a Group IV. donor. The sera of Group IV. donors are active against the corpuscles of all other groups and, although diluted in the circulation of the recipient, some effect is almost certain to take place and may account for some of the reactions described. (Schütze's absorption tables show that corpuscles of Group I., Group II. and Group III. are agglutinated by varying dilutions of Group IV. serum, sometimes by 1 in 8, sometimes by 1 in 32 and even by 1 in 128 *in vitro*).

To return to infants, Happ found that the corpuscles developed agglutinable substances before the serum developed agglutinin, so that only gradually does the blood group become established; but after one year the group is usually fixed and after two years is practically always fixed. The agglutinins are present in mothers' milk and are identical with those in the serum, but an infant artificially fed developes its agglutinable substances and agglutinin in no way different apparently to a breast-fed infant and the blood of the latter may develope the characters of a group different to that of its mother.

The Inheritance of Iso-Agglutinins.

What factors determine the blood group in which a child become stabilized, usually before the age of two years? Shattock,[8] in 1900, thought there was some association between disease and iso-agglutinins, but Landsteiner[9] and others could not find any evidence of this association. Quite recently (1921) this hypothesis has been tentatively revived by W. Alexander,[10] who found in a small series of cases of malignant disease (fifty only) an increased percentage of Groups III. and IV. (Jansky's classification) and suggests an increased susceptibility in persons belonging to these groups. His figures, however, are too small.

It was left to von Dungern and Hirschfeld to demonstrate that the iso-agglutinins were inherited according to Mendel's laws. We have also examined twelve complete families and have not found any violation of these laws. Von Dungern and Hirschfeld[1] showed that there were only two agglutinable substances or agglutinogens *A* and *B* and explained the results of the examination of children by known parents by the hypothesis that (*i.*) *A* and *B* were separately inherited and (*ii.*) were each dominant factors, the absence of these factors being recessives. *A* and the absence of *A* were one allelomorphic pair, whilst *B* and the absence of *B* constituted a second allemorphic pair.

Group I. contains no agglutinable substances and is therefore appropriately represented by these authors as Group *O*, Group II. is *A*, Group III. is *B* and Group IV. contains both agglutinable substances and is therefore *AB*.

We must presume that the corpuscles of all individuals possess the qualities of either *A* or the absence of *A* and also either *B* or the absence of *B*. On the hypothesis that these qualities are inherited, both male and female germ cells must contain either *A* or the absence of *A* and either *B* or the absence of *B*. We shall represent the recessives as *a* and *b* respectively and it must be borne in mind that the absence of these qualities is to be regarded as just as much inherited as *A* and *B*.

Every germ cell will therefore contain either *AB*, *Ab*, *aB* or *ab*. Fertilization will therefore give the results shown in Table VI., where the horizontal symbols represent the male cells and the vertical symbols the female cells, or *vice versa*.

[1] Although, as Schütze states, these workers did not publish absorption proofs of their amplification of the Landsteiner theory, still Hirschfeld was aware of the absorption results in 1919, because in their paper already referred to L. and H. Hirschfeld state: "As against Moss we wish to point out that Group I. (Group IV. Jansky) does not represent any special individuality, but merely, as can easily be proved by absorption experiments, the combination of the properties *A* and *B*."

TABLE VI.—POSSIBLE VARIATIONS IN FERTILIZATION.
The Constitution of Fertilized Ova are Shown in the Sixteen Recombination Squares.[11]

	AB	*Ab*	*aB*	*ab*
AB	*AB*	*AB*	*AB*	*AB*
	AB	*Ab*	*aB*	*ab*
Ab	*AB*	*Ab*	*Ab*	*Ab*
	Ab	*Ab*	*aB*	*ab*
aB	*AB*	*Ab*	*aB*	*aB*
	aB	*aB*	*aB*	*ab*
ab	*AB*	*Ab*	*aB*	*ab*
	ab	*ab*	*ab*	*ab*

This table necessarily gives us the constitution of every individual as regards these qualities. There is only one possible constitution for a pure recessive and that is *ab.ab*. Group I. must always be so constituted. Group II. only contains one dominant (*A*), but it may have two constitutions, either *Ab.Ab* or *Ab.ab*. In the terminology sometimes found in the literature of heredity, Group II. or *A* may have a double dose of *A* or a single dose of *A*; in other words, it may be pure *A* or hybrid *A*. Similarly, Group III. contains only one dominant (*B*) and it may be constituted either *aB.aB* or *aB.ab*. From the table it will be seen that Group IV. or *AB* occurs no less than nine times, but only four of these are of different constitutions, *viz.*, (*i.*) *AB.AB*, a double dose of both qualities; (*ii.*) *AB.Ab*, a double dose of *A* and a single dose of *B*; (*iii.*) *AB.aB*, a double dose of *B* and a single dose of *A*; and (*iv.*) *AB.ab*, a single dose of both *A* and *B*. Once the possible constitutions in the fertilized ovum are thoroughly understood, it becomes a comparatively simple matter to explain the results of breeding.

We shall consider first the marriages between individuals containing neither dominant, neither *A* nor *B*, and we have seen that these people can only be *ab.ab*. According to Mendel's laws recessives, when inbred, only breed recessives and this is what we find:

Parents both Group I., *ab.ab* = *ab.ab*
Children only Group I. *ab.ab*

We have examined five families with both parents belonging to Group I.. The seventeen children of these families all belonged to Group I.. In all our family grouping, not only were the corpuscles put up against Group II. and Group III. sera, but the sera of all members were put up against the corpuscles of all the other members. Hirschfeld examined seven families with twenty children all belonging to Group I..

In the second place we shall consider marriages in which there is one allelomorphic pair; in other words, one dominant. Let us first take *A*. Marriages that fall into this category are: (*i.*) Marriages between Group II. (*A*) and Group II. (*A*). (*ii.*) Marriages between Group II (*A*) and Group I. (*O*).

(*i.*) We have shown that Group II. may be constituted in two different ways, either *Ab.Ab* or *Ab.ab*. The constitution of children of Group II. intermarriage will depend therefore on the constitution of the parents. The germ cells of a parent *Ab.Ab* will be of one kind only, *viz.*, *Ab*, whereas the germ cells of a parent *Ab.ab* will be alternately *Ab* and *ab*. Therefore, when both parents are pure *A* (*Ab.Ab*) the children can only be pure *A* (*Ab.Ab*). When both parents are hybrid *A* (*Ab.ab*), the children should be pure *A* (*Ab.Ab*), hybrid *A* (*Ab.ab*) and *ab.ab* which we saw was Group I. Table VII. illustrates this result.

TABLE VII..

	Ab	*ab*
Ab	*Ab*	*Ab*
	Ab	*ab*
ab	*Ab*	*ab*
	ab	*ab*

Relative proportion of children: One *Ab.Ab* (Group II. pure); two *Ab.ab* (Group II. hybrid); one *ab.ab* (Group I.).

When one parent is pure *A* (*Ab.Ab*) and one hybrid *A* (*Ab.ab*), the children should be pure *A* and hybrid *A* in equal numbers, as is shown in Table VIII..

TABLE VIII.

	Ab	*Ab*
Ab	*Ab*	*Ab*
	Ab	*Ab*
ab	*Ab*	*Ab*
	ab	*ab*

Relative proportion of children: Two *Ab.Ab* (Group II. pure); two *Ab.ab* (Group II. hybrid).

From these tables it follows that the children of Group II. intermarriages should nearly always belong to Group II., but that occasionally there will be a Group I. child when both parents are hybrid Group II.. Von Dungern and Hirschfeld examined eight families of this kind and of the thirty-five children twenty-nine were Group II. and six Group I.. We have examined one family with three children, two being Group II. and one Group

I.. The hypothesis, therefore, explains the findings extremely well.

It will be noted that of thirty-eight children seven are Group I.. If in all these families the parents were both hybrid, we would expect one-fourth of the children, that is nine, to be Group I.. It is permissible to infer that usually Group II. individuals are hybrid, though we wish to emphasize the fact that our numbers are small.

(*ii.*) Still keeping to one dominant, we have marriages between Group II. (*A*) and Group I. (*O*). If the Group II. is pure *A* (*Ab.Ab*), the other parent being the pure recessive *ab.ab*, then the children could only be *Ab.ab*, that is, hybrid Group II.. If the Group II. parent is hybrid (*Ab.ab*) the children should be hybrid Group II. and Group I. in equal numbers, as is shown in Table IX..

TABLE IX..

		Ab	*ab*
ab	{	*Ab*	*ab*
		ab	*ab*
ab	{	*Ab*	*ab*
		ab	*ab*

Relative proportion of children: Two *Ab.ab* (Hybrid Group II.); two *ab.ab* (Group I.).

From these two types of union between Group II. and Group I. we should expect therefore a predominance of Group II., but a fair sprinkling of Group I.. Von Dungern and Hirschfeld examined twenty-eight of such families and of seventy-six children fifty-six were Group II. and twenty Group I.. We have examined three such families with ten children, of whom seven were Group II. and three Group I.. Again the hypothesis seems to fit the facts very closely.

Having dealt fully with one dominant *A*, there is no need to do likewise with the other dominant *B*; the explanations already made apply to intermarriages in Group III. (*B*) and marriages between Group III. (*B*) and Group I. (*O*). The agglutinable substance *B* being much less common in German and British communities than the substance *A*, examples of such marriages were correspondingly more difficult to discover. Von Dungern and Hirschfeld give one example of intermarriage in Group III. (*B*) and the two children were Group III.. They give two examples of marriage between Group III. (*B*) and Group I. (*O*). There were altogether seven children, four being Group III. and three Group I.. We examined one such family with three children, one being Group III. and two Group I.. The proportion of children of Group I. is higher than in the corresponding Group II.-Group I. unions, but the number of children examined is so much smaller that a comparison is scarcely permissible.

In the third place, we will consider marriages in which the two separately inherited dominant qualities, substances or characters (it matters not which we call them) *A* and *B* occur. It is obvious that they may both be present in each parent [marriage of Group IV. (*AB*) with Group IV. (*AB*)], or both in one parent and one in the other [marriage of Group IV. (*AB*) with Group II. (*A*) or Group III. (*B*)], or both in one parent and neither in the other [marriage of Group IV. (*AB*) with Group I. (*O*)], or one in one parent and the other dominant in the other [marriage of Group II. (*A*) with Group III. (*B*)]. All these are examples of dihybridism.

Let us take the simplest first, marriage of Group II. (*A*) with Group III. (*B*). We have already seen that the constitution of *A* may be either pure (*Ab.Ab*) or hybrid (*Ab.ab*) as regards *A* and similarly *B* may be either pure (*aB.aB*) or hybrid (*aB.ab*) as regards *B*. There are therefore four varieties of union between Group II. and Group III.. Table X. shows the results of union between pure Group II. and pure Group III..

TABLE X..

		Ab	*Ab*
aB	{	*Ab*	*Ab*
		aB	*aB*
aB	{	*Ab*	*Ab*
		aB	*aB*

All children are *Ab.aB* = *AB.ab*, that is, Group IV. (hybrid).

Table XI. shows the results when Group II. (*A*) is pure and Group III. (*B*) is hybrid.

TABLE XI..

		Ab	*Ab*
aB	{	*Ab*	*Ab*
		aB	*aB*
ab	{	*Ab*	*Ab*
		ab	*ab*

Children are *AB.ab* (Group IV. hybrid) and *Ab.ab* (Group II. hybrid) in equal numbers.

Conversely in unions between hybrid Group II. (*A*) and pure Group III. (*B*), the children are Group IV. and Group III. in equal numbers. Finally, when both Group II. and Group III. are hybrid, the curious result is obtained that the children are Group I., II., III. and IV. in equal numbers, as shown in Table XII:

TABLE XII..

		Ab	*ab*
aB	{	*Ab*	*aB*
		aB	*ab*
ab	{	*Ab*	*ab*
		ab	*ab*

Children are *AB.ab* Group IV. (hybrid), *ab.aB* Group III. (hybrid), *Ab.ab* Group II. (hybrid), *ab.ab* Group I. (hybrid).

We did not meet with any family in which the parents were Group II. and Group III.. Von Dungern and Hirschfeld met with no less than nine such families, in which there were twenty-three children. Of these, five belong to Group IV. (*AB*), ten to Group II. (*A*), six to Group III. (*B*) and two to Group I. (*O*). Now, from the above tables it will be seen that, excepting when both parents are hybrid, at least half the children should belong to Group IV. (*AB*), whereas in von Dungern and Hirschfeld's families only five out of twenty-three belong to Group IV. (*AB*). The inference is permissible that the majority of Group II. and Group III. individuals are hybrid as regards *A* and *B* respectively.

Let us now take unions between Group IV. (*AB*) and Group I. (*O*). We have already seen that Group I. can only have one constitution (*ab.ab*), whereas Group IV. may be constituted *AB.AB*, *AB.Ab*, *AB.aB* or *AB.ab*, that is to say, it may be pure as regards both dominants, or pure for one and hybrid for the other, or hybrid for both.

In the first case, union with Group I. will produce only *AB.ab* (hybrid Group IV.).

Table XIII. shows the results when Group IV. is pure as regards *A* and hybrid as regards *B*.

TABLE XIII..

		AB	*Ab*
ab	{	*AB*	*Ab*
		ab	*ab*
ab	{	*AB*	*Ab*
		ab	*ab*

The children are *AB.ab* (Group IV. hybrid) and *Ab.ab* (Group II. hybrid) in equal numbers.

Similarly, when Group IV. is pure as regards *B* and hybrid as regards *A*, the children are Group IV. and Group III. in equal numbers.

Finally, Table XIV. shows the results when Group IV. is hybrid as regards both *A* and *B* and is constituted *Ab.aB*. Here we have to be careful to consider a possible crossing over in the chromosomes, so that the constitution of the germ cells may not only be either *Ab* or *aB*, but may be also *AB* or *ab*.

TABLE XIV..

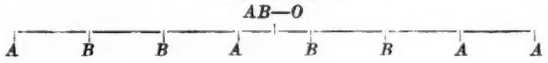
		Ab	*aB*	*AB*	*ab*
ab	{	*Ab*	*aB*	*AB*	*ab*
		ab	*ab*	*ab*	*ab*
ab	{	*Ab*	*aB*	*AB*	*ab*
		ab	*ab*	*ab*	*ab*

Children are *AB.ab* (Group IV.), *Ab.ab* (Group II.), *aB.ab* (Group III.), *ab.ab* (Group I.) in equal numbers.

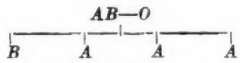
We examined one family with parents belonging to Group I. and Group IV. respectively and of the eight children there were four of Group II. and four of Group III.. In another family we found three children belonging to Group II. and one to Group III.. In neither of these families did we find any children belonging to the groups to which the parents belonged, a striking example of the incompatibility of children's and parents' blood. Von Dungern and Hirschfeld examined three families and of the eight children three belonging to Group IV. (*AB*), two to Group II. (*A*), one to Group III. (*B*) and two to Group I. (*O*). Combining their figures with ours we have twenty children, of which three are Group IV., nine Group II., six Group III. and two Group I.. These figures are rather small to draw conclusions from, but we have seen that, except when Group IV. is hybrid as regards both *A* and *B*, Group IV. should be found in at least half the children, whereas in our combined figures it is only found in three out of twenty. The inference is perhaps permissible that Group IV. is usually hybrid as regards both dominants *A* and *B*. We wish to suggest here that the segregation of these characters may not be entirely casual. Evidence of this is shown in two of our families, *Mc* and *Mc*, and in Family No. 72 of von Dungern and Hirschfeld, that is to say, in three families out of five yet published.

GENEALOGICAL TREES.

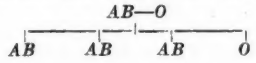
Mc Family.



Mc Family.



Von Dungern and Hirschfeld Family No. 72.



We have just shown that it is not possible for a Group IV. (*AB*)-Group I. (*O*) union, accepting von Dungern and Hirschfeld's application of Mendel's laws to this case, to result in children either of

Group II. (*A*) and Group III. (*B*) together, as in families *Mc* and *Me*, or of Group I. (*O*), as in No. 72, unless the parent Group IV. (*AB*) is hybrid as regards both *A* and *B*, therefore *AB.ab*. In our two families the dominants *A* and *B* have always separated and alternate germ cells were *A* (really *Ab*) and *B* (really *aB*), although if these characters did not influence each other in any way, we should have had an equal number of germ cells *AB* (resulting in Group IV. children) and *ab* (Group I. children). In Family No. 72 exactly the reverse phenomenon is shown. The children are either *AB* or *ab*, that is to say, the two dominants appear to be linked, as also do the two recessives. This appears to us to be a very interesting phenomenon and is worthy of further study.

The remaining types of marriages in which two dominants come into play, *viz.*, marriage of Group IV. with Group IV. and of Group IV. with Group II. or with Group III., are comparatively rare and as both parents may show several grades of hybridism, the explanation becomes very involved, but anyone interested can work out the varieties of children possible by employing recombination squares.

Is it possible to ascertain whether an individual belonging to Group II., Group III. or Group IV. is hybrid (Group I. is always pure)? Plant and animal breeders usually endeavour to ascertain the constitution of a supposed hybrid by back-crossing with a pure-bred, particularly with a pure recessive. In man we have in Group I. a double recessive, so that by examining the children of crosses between Group II., Group III. or Group IV. and Group I. we should, presuming there were enough children, ascertain whether the former were pure or hybrid. We have re-examined from this point of view the five families in which the parents were Group IV.-Group I.; in every case the children show that the Group IV. parent was hybrid as regards both *A* and *B*. Examination of the Group II.-Group I. unions shows that the children would be approximately of the constitution found if Group II. were a little more frequently hybrid than pure. The number of Group III.-Group I. unions are too small to analyse in this way.

Before concluding, we wish to mention that the iso-agglutinins can be of considerable medico-legal importance. It is now possible to say more than that a specimen of blood is human; it is possible to say that it belongs to one of four groups and if an accused person belongs to a group different to that to which a specimen of blood is found to belong, then this blood cannot be his. It may also be of use in determining who is not the father of a child. A thorough knowledge of the method of inheritance is necessary before conclusions can be drawn, but such evidence may sometimes be overwhelming. The forensic importance of the iso-agglutinins was first noted by von Dungern and Hirschfeld, but was not apparently applied. Schütze[5] in 1921 showed that blood which had been dried for several months, could be correctly grouped, the best method being an absorption of a stock Group IV. serum with the insoluble residue obtained from the dried blood and then an agglutination experiment with the absorbed serum against Group II. and Group III. corpuscles. Reuben Ottenberg,[12] who is apparently not aware of Schütze's work, sets out the extent and limitations of application to the question of disputed paternity.

We desire to return thanks to the Aborigines Protection Board of New South Wales and to the Secretary, Mr. Pettitt, for great assistance in our examination of aborigines, to Dr. Langdon, Dr. Lorna Beveridge, Sister Southwood and Mr. E. Dawes, of the Royal Prince Alfred Hospital, for supplying blood samples.

Summary.

1. The literature on the subject of the iso-agglutinins discovered by Landsteiner about twenty years ago has been generally reviewed.

2. In particular, attention has been drawn to the important work of von Dungern and Hirschfeld on the inheritance of the iso-agglutinins.

3. The results of union between parents of the same and different blood groups have been worked out theoretically according to modern principles of heredity and an analysis made of families examined by von Dungern and Hirschfeld and by us.

4. It would appear that Group II. and Group IV. and by analogy Group III. are often hybrid. Much larger figures are necessary before the percentage frequency can be determined. It is suggested that unions of these groups with the pure recessive Group I. should be studied in order to obtain this information.

5. The corpuscles of 405 Australians have been grouped and the percentage frequency shown. This is subject to correction by larger figures.

6. The blood corpuscles of 141 Australian aborigines have been grouped and a high relative infrequency found for Group III. as compared with Group II.. The numbers examined are small compared with the number (500) of each race examined by L. and H. Hirschfeld, but it seems very probable that the Australian aborigines will fall into the European type as regards biochemical index. Further examination of aborigines, preferably in different parts of Australia, is urged upon all interested in ethnology.

7. The forensic importance of blood groups has been alluded to and attention has been drawn particularly to the practical work of Schütze.

8. With regard to transfusions of blood, the ideal must be to use a donor belonging to the same group as the recipient, instead of using Group I. donors as a routine. The difficulty with infants is that their group may not be established until the end of the second year. We suggest that in the first month the infant's corpuscles be tested against the donor's serum and after the first month and up to two years the serum of both donor and infant be tested against the corpuscles of infant and donor respectively.

References.[1]

(1) Hirschfeld, L. and H.: *The Lancet*, 1919, 2, 675.

(2) Von Dungern, E., and Hirschfeld, L.: *Zeitschrift für Immunitätsforschung, Originale*, 1910, 4, 531, 1910, 6, 284, and 1911, 8, 526.

[1] Since this paper was read we have received the *Journal of Immunology*, Volume VI., No. 5, dated September, 1921, to which Reuben Ottenberg has contributed a paper "Hereditary Blood Qualities."

(3) Jansky, J.: Reviewed in *Jahresbuch für Neurologie und Psychiatrie*, 1907, 1092.
(4) Moss, W. L.: *Bulletin of the Johns Hopkins Hospital*, 1910, 21, 63.
(5) Schütze, H.: *British Journal of Experimental Pathology*, 1921, 2, 26.
(6) Swift, Brian H.: THE MEDICAL JOURNAL OF AUSTRALIA, 1921, 2, 482.
(7) Happ, W. M.: *Journal of Experimental Medicine*, 1920, 31, 313, giving extensive bibliography
(8) Shattock, S. G.: *Journal of Pathology and Bacteriology*, 1900, 6, 303.
(9) Landsteiner, K.: *Wiener Klinische Wochenschrift*, 1901, 14, 1132.
(10) Alexander, W.: *British Journal of Experimental Pathology*, 1921, 2, 66.
(11) Morgan, T. H.: "Physical Basis of Heredity," published by J. B. Lippincott Company.
(12) Ottenberg, R.: *The Journal of the American Medical Association*, 1921, 77, 682.

BONE GRAFTS.[1]

BY HUGH R. G. POATE, M.B., CH.M. (SYD.), F.R.C.S. (ENG.),
Honorary Assistant Surgeon, Royal Prince Alfred Hospital; Surgeon, Prince of Wales Hospital; Honorary Assistant Surgeon, Orthopædic Department, Royal North Shore Hospital of Sydney.

Preface.

THE present article is intended merely as a brief review of certain of the fundamental principles underlying the use of the bone graft in surgery laid down by the pioneers in this work, with a few remarks as to some of the important points noted during an experience which began at the latter end of 1916 under the direct influence of Sir Robert Jones at the Shepherd's Bush Orthopædic Hospital. It is not intended to discuss the technique, since it is that laid down by Albee and is now followed in the main by the majority of workers in this branch of surgery. The number of ununited fractures as a result of wounds sustained in the late war has widened enormously the field for bone grafting. With the experience so gained, it is possible that some unanimity of opinion may be arrived at as to the essential principles of bone regeneration and as to the factors influencing it. The clinical utility as well as the practical value of bone grafts have been established long ago and it is as well that the debatable histological rôle played by bony tissue has not been essential in its entirey for success in its surgical application.

Introduction.

Cellular life may be quite independent of organic or somatic life and under favourable conditions tissue cells may retain their viability long after being removed from the living organism. It is on account of this phenomenon that detached portions of tissue may be successfully transplanted, but this viability varies with the type of tissue, since the higher the development of the cell and the richer the tissue in blood vessels, the less likely is it to survive. The lower orders of tissue, which need less nutrition, such as bone, fascia, etc., continue to live for days on their own slender but sufficient resources and are endowed with the capacity of very quickly restoring their lines of communication in their new sphere when transplanted, whereas more highly specialized tissues undergo necrosis unless nourished by a distinct blood circulation.

The tissues and body fluids of every individual vary in some degree from those of every other person and while this may be only slight, it is sufficient to influence us in using the individual's own tissue for the repair of his defects whenever feasible.

Autogenous bone grafts are practically always successful if carried out under full aseptic precautions and according to the correct technique, whereas with homogenous grafts there is some uncertainty, probably due to the action of foreign proteins, which vary most with difference in race, next with distant relatives, near relatives and least with individuals of one family (Lexer).

Heterogenous grafts are so seldom successful that in the light of our present-day knowledge it is a decided surgical error to make use of them.

Skin grafting is an age-old procedure and it is interesting to note Macewen's remark that: "The vegetative capacity of the bone cell is as great as that of the epithelial cell; and if one grants not only the viability of the transplanted epithelium, but also its powers of extensive proliferation, then, judging by analogy, the bone cell ought to show (and does show) equal capability of living and growing when transplanted." Numerous preparations of bone and allied substances have been tried in bone-grafting and their comparative values have been placed by Kausch as follows:

(1) Pedunclated soft parts with periosteum-covered bone flap.
(2) Free transplanted periosteum-covered autoplastic bone.
(3) Free transplanted periosteum-covered homoplastic bone.
(4) Fresh boiled bone.
(5) Fresh preserved bone.
(6) Cadaver or fœtal bone, obtained under sterile conditions.
(7) The same bone boiled.
(8) Ivory.
(9) Foreign bodies, such as metal.
(10) Fresh animal bone, living or boiled.

There is fairly general agreement that the first three materials are the only ones now permissible and they are certainly the only ones that can be inserted with safety or certainty of success in a bed free from periosteum.

The History of Bone Growth Research.

In 1736 a young London surgeon, John Belchier, was invited to supper by a calico printer in the city. The host was an economical man and used the madder-soaked bran from his dye-vats to feed his pigs, with which in turn he fed his friends. Belchier's curiosity was aroused by the ruddy colour of the bones in the pork and he subsequently carried out a series of experiments on the subject of vital staining of bones by madder, which were recorded in the *Transactions of the Royal Society* (*Philo-*

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on November 25, 1921.

sophical Transactions, Volume XXXIX., page 287). Having done this, he let the matter alone.

Shortly afterwards these observations fell into the hands of that extraordinary man, Duhamel—a French squire—who had spent his youth as a student of law and was then experimenting "on the land." He quickly became interested in the verification of Belchier's experiments and, knowing something of repair in broken twigs, began to wonder how repair was effected in broken bones. By feeding the subjects of his experiments with madder he could trace the formation of newly-laid bone and thought he saw the periosteum as being its chief source, its deepest stratum apparently serving the same purpose as cambium did for growing wood. He carried out a great amount of research upon bone growth and the chief conclusions arrived at were that bone is stained with madder only as it is being laid down; that growth in thickness is brought about by circumferential deposition of plate upon plate; that a long bone grew in length at its extremities and that the deepest layer of periosteum was the maternal tissue of bone. Truly a great achievement for a man who was not trained in medicine!

These observations aroused great interest and discussion and were assailed with vehemence by Haller, whose name stood high in William Hunter's school in 1748, at the time when John Hunter joined it. Haller's opinions influenced Hunter in all his work, as he was convinced that arteries, and arteries alone, could form bone. Thus we see that with the appearance of Duhamel and Haller over 170 years ago we have two schools brought into existence, one which regards periosteum as osteogenetic and the other which denies it any bone-forming powers at all. At this very day we still have these self-same two schools of thought. Hunter conducted many experiments in support of his views and it was he who recognized that absorption is an essential factor in the process of bone growth. These two men, Duhamel and Hunter, laid the basis of our knowledge as regards the physiology of bone in days long before the advent of the microscope and of the two Hunter laid the firmest and deepest part of that foundation.

In 1842 Flourens published his researches on the development of bone, having repeated and extended the observations of previous workers. He stated that Duhamel was right that new bone was deposited on the surface of bone under and by the periosteum; Hunter was right that absorption of bone was continually taking place.

In 1857 Ollier came on the scene, firmly believing that periosteum had no osteogenetic power and added clinical study to his experimental researches, which were of a very wide character. He assigned to bone itself the all-important function of repair and showed that it could carry on all its vital processes quite independently of its covering membrane and could live and grow in a suitable environment. But he also stated that periosteum was only fully osteogenetic in the young and was not so in the adult.

In 1893 Barth announced that for grafting purposes autogenous living bone, with or without periosteum, and homogenous, heterogenous and macerated dead bone all behaved alike, but in 1908 he admitted that the first mentioned was the best for securing active new bone formation. His views have had a wide influence, particularly in founding the idea that bone grafts simply act as a passive scaffolding, even though his theories were built upon slender foundations.

Axhausen, in 1908, published his work with a wealth of detail of the microscopical appearances in bone grafting, but he is so biassed by a preconceived idea of the osteogenetic power of the periosteum as to be incapable of taking a fair view of matters relating to it. He pointed out that longitudinal incision of periosteum increased subperiosteal new bone formation. He also showed that the greater part of the compact tissue of the graft suffered the loss of its living cells.

Finally, in 1912, we have Macewen's published conclusions after thirty-five years' experience of clinical events in bone surgery and animal experimentation, in which he denies periosteum any powers of osteogenesis and classes is as being merely a limiting membrane of bone.

As Keith remarks: "He has raised bone to a proper biological and surgical status, but in doing so has been unjust to periosteum, which, from both anatomical and surgical points of view, has osteogenetic powers in its deepest stratum."

Mention must here be made of a paper published in 1916 by Dobrowolskaja, who cultivated both periosteum and bone *in vitro*. He shows that bone itself devoid of periosteum is capable of developing new cells in luxuriant growth (which he concludes are capable of osteogenesis), whereas periosteum alone gave hardly any growth, but bone with periosteum gives an even more active reaction. He also notes that blood coagulum aids the growth of osteogenetic cells by means of its fibrinous network.

Summary of Research Work.

It is difficult to determine the exact rôle each element of bone tissue plays, but, after viewing the evidence presented, we may conclude as follows:

Periosteum.

In young bones it has an osteogenetic power which in adult bone is in abeyance, unless stimulated by trauma or inflammation (see Figures V. and VI.), when the cells of its deep or cambium layer take on active bone-forming functions. It acts chiefly as a limiting membrane of bone and although its retention in grafting is unnecessary, yet it is desirable as retaining osteoblastic cells and also affording a ready means of establishing new vascular connexions between the graft and its bed.

Marrow and Endosteum.

All observers agree as to the osteogenetic powers of the marrow surface of bone, if closely contacted with the tissues of the bed of a graft, so as to allow the rapid establishing of vascular connexions. Under these circumstances it takes a very active part in new bone formation (see Figures IX. and XI.).

FIGURE I..
Ununited Fracture of Radius Following Gunshot Wound. About two years after injury.

FIGURE II..
Same Four Months After Grafting. Note outline of graft and extent of repair in central area.

FIGURE III..
Same Eighteen Months Later: Fractured by Violence.

FIGURE IV..
Same Three Months After Fracture. Note firm bony repair, also individuality of graft after two years.

FIGURE V..
Excessive Subperiosteal Bone Formation Around Elbow Joint Resulting from Chronic Inflammation.

FIGURE VI..
Excessive Bone Formation Beneath Periosteum Resulting from Chronic Infective Osteomyelitis.

FIGURE VII..
Ununited Fracture of Radius Two and a Half Years After Injury.

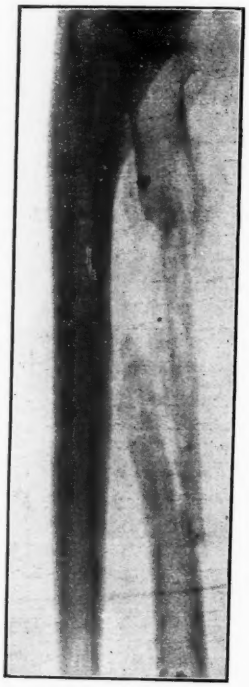


FIGURE VIII.
Same About One Month After Grafting.

FIGURE IX..
Same Some Three Months Later. Compact layer of graft necrotic. Good bone formation from endosteum.

FIGURE X..
Same After Removal of Necrotic Compact Layer. Note gap in bone now bridged across.

FIGURE XI..
Same About Eighteen Months After Graft. Almost complete reconstruction of shaft from endosteum. Function fully restored.

FIGURE XII.
Successful Graft of Humerus of Two and a Half Years' Standing. Note graft, still retains its individuality.

The Compact Bone.

If it has a free blood supply, compact bone is quite independent of either periosteum or endosteum for both growth and repair. If the blood supply be temporarily shut off, as in a graft, a great number of the cells die, but those on all free surfaces survive and proliferate to form new bone. The tissue becomes vascularized and then in the new Haversian canals new bone is deposited. That a graft acts as more than a mere scaffolding is amply shown in the accompanying radiograms, where the individuality of the graft is seen to be clearly maintained two or three years afterwards, having become an integral part of the bone itself (see Figures IV. and XII.).

When the histological characters of compact bone as taken from a living subject is viewed, it is seen that a great number of bone cells have reached their full degree of development and become shut off in bony lacunæ communicating with each other and with Haversian canals (and periosteum or endosteum) by canaliculi. Such cells may be regarded as adult and may have very slight, if any, powers of osteogenesis. It is those cells that are seen to die and disappear in a graft.

On the surface of the bone, just beneath or in the deep or combium layer of the periosteum, also in the Haversian canals and in the endosteum, are seen other cells of a more embryonic type which are potential osteoblasts. When the necessity arises for new bone formation, it is those cells which are called into action and full play given to their osteogenetic powers. Provided their nutrition is assured in a graft, they are the cells which re-establish bony continuity and insure success of the grafting process. The periosteum, whatever its actual powers as to new bone formation, plays an important part in quickly restoring vascular connexion with surrounding tissues and so insuring necessary nutritive channels to preserve the vitality of the bone cells. The quicker and more complete this process, the greater the number of cells saved and the more certain the success of the graft.

Homogenous and Heterogenous Grafts.

The viability and proliferative power of a homogenous graft are more uncertain than in the case of an autogenous one. Heterogenous grafts become encapsuled or absorbed and show neither vitality nor proliferative capacity. They may, however, act for an indefinite period as a splint or as a scaffolding for the laying down of new bone.

Details Essential for Success.

From a consideration of the facts presented we are now in a position not only to realize certain details essential to immediate success in bone grafting, but why they are so. Final success of the graft and the extent to which new bone formation will proceed, is explained by Wolff's law, that is to say, the internal structure and the external conformation of the bone is determined by the mechanical stresses and strains it is required to stand, or, in other words: "The amount of growth in a bone depends on the need for it" (Murphy).

First of all, we see that the best results are to be obtained by an autogenous graft composed of all layers of bone, periosteum, compact bone and endosteum, which is at once laid into the bed prepared for it, so that exact coaptation of each of these layers is obtained. Next firm fixation in this position is demanded, until such time as bony union is obtained between the graft and its bed. We must not lose sight of the importance of the osteogenetic powers of the bed, which, from the fact of its having an already established circulation, should be greater than that of the graft.

The better the preparation of the bed with the surrounding soft tissues and covering layers, including the skin, the more certain is the success of the graft.

According to the extent and rapidity of vascularization of the graft, we have a greater or less degree of cellular death in it. If this be of any marked extent, then a considerable amount of absorption and replacement is called for; this is a process which must be gone through before any degree of bony proliferation can be carried out. This process may go on for some six to eight weeks and must always be of greater extent in cases where a skeletal gap has to be bridged, since the central part of the graft cannot then be coapted to bone and is wholly dependent on its own osteogenetic powers. We thus see why it is that absorption is prone to occur in such cases and fracture of the graft to come about. This state of affairs is very different to that of fracture (by violence) of an established graft, for in this latter repair occurs in the usual way, while in the former osteogenesis may come to a standstill and require a further awakening, such as another graft. In one case where this occurred, there had been an extensive gap in the ulna—some fifteen centimetres. The graft took well, except that absorption outpaced regeneration in the centre and a gap developed for about one centimetre. A second graft was inserted after some months time and brought about successful bony union. It was noticed that the graft as such was plainly distinguishable to the naked eye as compared with the receiving ulna and was very dense and hard. The bed for the second graft had to be prepared in this recently regenerated bone, which reacted in just the same way as ordinary adult bone does.

As illustrating the strength of grafted bone well established, there is the case of a man who had an elbow which had become fixed by bony ankylosis and also had the continuity of the humerus restored by a graft. Two years later he had a severe fall on to the elbow of sufficient violence to undo the bony ankylosis of the joint and tear off the tip of the olecranon, but the grafted area of the humerus was unaffected. It is worthy of note that both humerus and femur are difficult bones to graft successfully if there be much breach in continuity. This is probably due to the difficulty of controlling movement in the shoulder and hip joints and thus of insuring exact coaptation of the graft and its bed for a sufficient length of time to allow of firm union. The osteogenetic powers of both these bones are fairly good and it is usually found that the graft has taken well at one or other end.

Intra-Medullary Pegs.

Intra-medullary pegs have been commonly used in these bones, but in my own experience I have seen

so many failures that I have never employed these myself. Experiments show that such a procedure is of very little value as a method of inducing osteogenesis. The graft must be made to fit tightly into the medullary cavity and this very procedure prevents the growth of callus. The peg is too weak to act as an efficient splint for long and, owing to very deficient vascularization, the process of absorption far outruns that of osteogenesis, so that fracture readily occurs with the slightest strain.

In most cases a step operation or the wedging of one end of the bone stripped of periosteum into the other is the correct procedure to secure successful union, for in the former we insure correct coaptation of layer to layer, while in the latter the chief union occurs at the junction of the periosteal layers and not in the intra-medullary portion. In either case, to insure success just as much care must be taken to open up beyond the sclerosed areas as is done in preparing a graft bed.

Preparation of the Graft Bed.

It almost goes without saying that asepsis is just as essential in this work as in other branches of surgery, but there is no need for any elaborate aseptic ritual. Exclusion of the skin surface from contact with instruments, etc., which are to be used in the wound, is advisable. In all cases where there has been a septic compound fracture, the problem of latent sepsis in scar tissue or in the bone itself has to be borne in mind. It is surprising at times to see how long scar tissue can hold infective organisms and how a necrotic cavity may persist in bone, although the wound has been healed for months. So frequently is this the case that before a bone graft is attempted all "heavy" scar tissue should be excised some two or three months before the bone is touched. Even then it should be a rule never to attempt a bone graft until the wound has been completely healed for at least nine months. Any severe sepsis will assuredly cause necrosis of the whole graft and probably of part of the bone ends operated upon. A very slight degree of sepsis does not prevent bone repair, but it does hinder osteogenesis and delays union.

The presence of a sinus or any infective focus at all is a direct contra-indication of bone grafting. In septic wounds resulting in non-union the ends of the bones will invariably be found to have undergone some degree of sclerosis. In preparing the bed it is essential to open up well through this area into healthy bone and medullary cavity, so as to reach active osteoblastic tissue. I am convinced that non-observance of this procedure is a fruitful source of non-union of grafts. Bone which has not had sufficient inherent osteogenesis to develope union in the fractured area, cannot be regarded as suitable for grafting purposes, hence the frequent failure of a sliding graft as compared to the inlay and the futility of using chips of such sclerosed bone to fill in any gaps or cavities. As a rule, too, bone dust cannot be relied upon for any very great extent of osteogenesis, as the mechanical violence used in its production is sufficient to cause death of the greater part, if not all, of the contained osteoblasts. In the skull we have a type of bone different from the limb bones, as its osteogenetic activity is at a minimum, consequently it is necessary to open up the diplöe and wedge in the graft to some extent, not only to allow for a wider area of osteogenesis, but also to secure as firm fixation of the graft as is possible. In grafting the skull it is a good rule always to free the *dura mater* from the scalp and bony margin of the defect and to insert a layer of *fascia lata* between the *dura mater* and the graft. As a solid graft is unnecessary, the best bone to use is a rib, which should be split and the raw medullary surface laid against the *fascia lata*, while scalp is sutured over the periosteum.

Preparation of the Graft.

The motor saw (either the Albee or Geiger outfit) is in universal use for cutting the graft and shaping the bed. Personally I do not favour the twin saw, but use a single blade for both purposes, since it causes less trauma and it is easier to cut the graft to the exact size of the bed and so to secure firm and exact apposition. A stream of saline solution must be kept constantly flowing on the contact point of saw and bone, so as to minimize mechanical injury and over-heating of the tissues. For the same purpose a slow rate of revolution is safer than a very rapid one and is more easily controlled.

As to the best site for securing the graft, this is undoubtedly the tibia in its subcutaneous area and in its distal rather than proximal half, since the compact layer is here of a more even density and the endosteum is well developed. It is generally a mistake to include the tibial crest, as this region is composed of very dense, compact bone and it is difficult to get any corresponding endosteum of adequate extent. If tibial crest be used, a large area undergoes cellular death, owing to the difficulties in establishing efficient vascularization; eventually it undergoes osteoporosis, with consequent weakening and liability to fracture, a process in no way as marked in grafts including the whole thickness of the bone with a less dense area of compact bone.

Rib or the crest of the ilium is only of use in skull or jaw work, as elsewhere it becomes absorbed or because of its fragility fails where it is desired to establish firm, strong bone. A rib is not designed to bear a heavy strain and when transplanted never seems to grow into dense, hard bone, like one of the long bones of the limbs. The fact of individuality in bones, just as in persons, cannot be ignored. The length of the graft is very important, as it must fill the bed completely and extend well beyond sclerosed areas into healthy bone. This usually means four or five centimetres above and below the line of fracture or bone ends.

Another important point is the width of the graft; this depends upon the width of the bed available. In the radius and ulna this should be the full width of the medullary cavity, but in large bones, such as tibia and humerus, etc., the graft must be wide enough to be able to take a considerable amount of strain, that is, it should be some ten to fifteen millimetres wide. In a few cases where there had been previous grafts attempted and there was no definite

medullary cavity to be seen on X-ray examination, I made three cuts in each end of the bone and wedged in three thin slices of bone, filling up the space between them with other thin pieces. This gave a wide surface area for osteogenesis and proved quite a successful manœuvre. I do not commend it as a routine method, however, as I place much more reliance on the full-sized graft with intact periosteum.

Fixation of the Graft.

Before this is actually carried out, it is very important to see that efficient hæmostasis has been achieved. Blood clot will not nourish the damaged or transplanted tissue; in fact, its presence hinders vascularization, for it acts as a buffer between the bone and the surrounding tissues, preventing the necessary rapid establishment of capillary circulation. If there be any mild sepsis, blood clot acts as a very favourable medium for the growth of organisms.

Firm fixation of the graft is one of the fundamental essentials, so that coaptation of graft to bed may be maintained in correct relationship until union occurs. If the graft is cut so as to fit firmly and snugly into its bed and provision is made for efficient external splinting, preferably by plaster, there is no necessity to use any elaborate means of fixing the graft in its bed. Personally I think the less foreign material placed in close proximity to the graft, the better is its chance of survival.

Most of my own work has been carried out with a few strands of kangaroo tendon around the whole thickness of bone and graft and I do not rely on this to hold the graft in place for longer than a few days. The results obtained speak for themselves. Many workers advise drilling the graft and bone ends and fixing by wire, screws, bolts, etc., but these substances, by virtue of their being foreign elements, cannot but disturb the normal bone reaction and, if considered necessary, show that exact coaptation and firm fitting between graft and bed have not been achieved in the first place. The only exception to this is when the graft is being depended on to a large extent to hold one of the bone ends in position, as is often the case in the lower end of the radius, which has a tendency to adduction and pronation. A metal fixation agent may then be employed as being the lesser of two evils—foreign body or dislocation of graft from its bed by muscular and ligamentous strain.

Just as in all other orthopædic work, however, it is essential to correct as far as possible any such malposition or deformity before undertaking a curative operation.

The graft having been fixed in its bed, an attempt should then be made to bring periosteal edges into apposition and finally healthy soft tissues are sutured closely over the whole area according to their anatomical layers.

After-Treatment.

Complete immobilization of the part operated on must be secured and maintained by efficient splinting for at least ten or twelve weeks. Plaster is the best material to use and both the joint above and that below should be included. A window can easily be cut to allow of inspection of the wound, dressing and removal of skin sutures. After this a light splint may be applied and light massage with passive movement be employed. Later on active movement and exercise is allowed until firm, bony union is shown by X-rays. From four to six months should elapse before full use of the limb is allowed, as by then muscular nutrition, flexibility of tendons and joints and efficient bone regeneration have all taken place.

Conclusion.

In conclusion, I would remark that the results obtained in experiments on animals are not wholly in accord with those observed clinically in man. This may be one reason why disputes still go on as to the exact rôle of the various tissues concerned in bone repair. We must remember that with bone grafting operations in man we are dealing with tissues which for one reason or another have had their osteogenetic powers greatly impaired and in which the bone ends have undergone either a sclerosis or an osteoporosis. In animals healthy normal bone has been operated upon, a fact which must influence osteogenesis, as can be seen in man in the different reaction of the bone grafted area as compared to the tibia from which the graft is taken.

Irritation and inflammation of not too severe a degree stimulate osteoblastic activity, as can be seen in the formation of an involucrum as a result of osteomyelitis, exuberant callus growth in fractures about joints when immobility has not been achieved and in joints which are attacked by so-called rheumatoid arthritis. The only drug which may stimulate osteogenesis is thyreoid extract in liberal doses, while alcohol seems to exert a very decided effect in retarding the process. The most obstinate cases in which to obtain successful bone grafting are invariably chronic alcoholics.

Acknowledgements.

My thanks are due to Drs. Sear, Dight and Edwards for the skiagrams and lantern slides, while to the resident medical officers and nursing staffs of the Prince of Wales Hospital and of the Royal Prince Alfred Hospital this slight acknowledgement is in no way commensurate to their whole-hearted assistance and cooperation in this work.

References.

I wish to acknowledge the following authors, from whose writings free extracts have been taken:

Albee: "Orthopædic and Reconstruction Surgery," 1919.

Ernest W. Hey Groves: "Transplantation of Bone," *British Journal of Surgery*, October, 1917; "Ununited Fractures," *idem.*, October, 1918.

Professor Arthur Keith: "Bone Growth and Repair," *idem.*, April, July, October, 1918.

N. A. Dobrowolskaja: "Cultivation of Bone Tissue," *idem.*, October, 1916.

W. E. Gaillie and D. E. Robertson: "Repair of Bone," *idem.*, October, 1919.

Sir William Macewen: "Growth of Bone," 1912.

W. J. de C. Wheeler: "Points About Bone Grafts," *The British Medical Journal*, February 1, 1919; *The Medical Annual*, 1919.

Reports of Cases.

INTUSSUSCEPTION LIMITED TO THE APPENDIX.

By RONALD D. MCINTOSH, B.A., M.B., B.S. (MELB.),
Resident Surgeon, Melbourne Hospital.

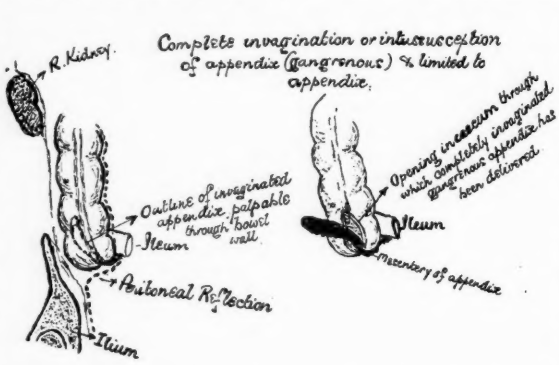
INTUSSUSCEPTION limited to the vermiform appendix is an extremely rare condition. In the vast majority of cases in which the appendix is involved in the case of an intussusception, it is either carried along with the intussusceptum in an incidental manner or the base of the appendix itself forms the apex of the intussusceptum. The affection is, as a rule, limited to childhood.

In the following case there was complete inversion of the appendix, which was gangrenous; the inversion was strictly limited to the appendix.

History of Case.

M.H., male, aged 21 years, was admitted under the care of Mr. B. T. Zwar on November 16, 1921, with a diagnosis of sub-acute appendicitis.

He had enjoyed good health up to the end of October. On November 1 he had first experienced a sense of fullness in the left epigastrium. The next morning he felt a severe pain of a colicky character, which began in the right iliac fossa, worked round the abdomen and returned almost to its starting point. This severe pain recurred daily in attacks, each attack lasting from one to three or four hours. In addition, there was constantly present a dull pain in the right iliac fossa. About two hours after the onset of pain he vomited and the vomiting continued intermittently for over an hour. Both types of pain, but not the vomiting, persisted up to the day of admission; their situation had not changed, but their severity had gradually increased.


R. Kidney
Complete invagination or intussusception of appendix (gangrenous) & limited to appendix.
Opening in caecum through which completely invaginated gangrenous appendix has been delivered.
Outline of invaginated appendix palpable through bowel wall
Ileum
Peritoneal Reflection
Ileum
Mesentery of appendix

The bowels acted regularly without aperients until sixteen days ago, when they became constipated, but were kept open by aperients. The stools were normal in appearance. There was no pain on micturition or frequency.

Physical Examination.

The temperature was 36.9° C., the pulse rate 76 and the respiratory rate 18.

The tongue was slightly furred; the teeth were sound; the breath was somewhat foul.

Examination of the respiratory and circulatory systems did not disclose anything abnormal.

Abdomen.

The abdominal muscles moved well with respiration. There was no distension. On palpation there was slight rigidity in the right iliac fossa and there was fairly marked tenderness in this region and a certain amount of hyperæsthesia. The tenderness and hyperæsthesia extended upwards towards the right loin.

The urine was alkaline; its specific gravity was 1,025. It was free of sugar and albumin. The provisional diagnosis was that of appendicitis in an appendix which was passing upwards towards the right kidney, probably retrocaecal and undergoing gangrenous change. This diagnosis was based on the location of the pain, hyperæsthesia and tenderness.

Operation.

Laparatomy was performed on November 17, 1921, by means of muscle splitting incision over MacBurney's point. The caecum was found completely fixed by the peritoneal reflection, as shown in the diagram. The appendix could be felt through the caecal wall passing upwards and outwards towards the right kidney. The caecum was mobilized and it was then found that the appendix was lying inside the caecum. Corresponding to its base there was a small dimple in the caecal wall. The caecum was opened and a gangrenous appendix completely turned inside out, like the inverted finger of a glove, was delivered through the opening. The inversion was definitely limited to the appendix.

The base of the appendix was crushed, ligated and divided. The stump was cauterized with pure carbolic acid and then covered with mucous membrane. The opening in the caecum was closed by two layers of catgut sutures.

The abdominal wall was closed in the usual way, drainage being provided through a split rubber tube. The patient made an uninterrupted recovery.

The accompanying diagrams show the peritoneal relationship and the position of the appendix.

In am indebted to Mr. Zwar for permission to publish this case.

Reviews.

IMMUNOLOGY.

"TRATTATO DI IMMUNOLOGIA," by Dr. Eugenio Centanni, Professor of General Pathology in the University of Modena, is a book of 296 pages in Italian, divided into six chapters, with an introduction, "Exposition of the Immunity Doctrine," giving the history of the subject.

The preface is dated July, 1921.

The headings of the six chapters are: (*i.*) "The Physiological Basis of Immunity," (*ii.*) "The Active Principle of Vaccine Material," (*iii.*) "Antigen Immunity (Serum Therapy)," (*iv.*) "Stomogen Immunity (Protein Therapy, Tertiary Immunity)," (*v.*) "Histogen Immunity," (*vi.*) "The Therapeutic Application of Immunity."

The first chapter is an exposition of the usual theories, but does not give the most recent additions to our knowledge of the bio-chemistry of the proteins and does not deal with the important bearing of modern endocrinology on the subject.

The object of the fourth chapter is explained thus: "Stomogen immunity is directed to the destruction of intermediary non-specific poison, which maintains the fundamental symptomatology of the infective process."

In the fifth chapter, as in other parts of the book, some of the terms used are peculiar; for example, an explanation is given of the difference between "humoral immunity" and "histogen immunity."

Some of the statements are not in accord with the results of recent research work. The following example will suffice: "Eclampsia and various nervous disorders of pregnancy are regarded as a reaction to the absorption of the placental villi and fœtal derivatives, heterogeneous material and hence antigen, through the maternal organism."

As the subject of immunology is controversial the book may be of interest to those who read Italian and wish to ascertain the views of an author who divides it into "antigen stomogen and histogen" immunity, but it cannot be recommended to the reader who requires a clear and concise summary of all the most recent knowledge of the subject and its practical application.

[1] "Trattato di Immunologia," by Eugenio Centanni, Professore di Patalogia Generale nella R. Università di Modena. Milan: Società Editrice Libraria; Crown 4to., pp. 318.

The Medical Journal of Australia

SATURDAY, FEBRUARY 25, 1922.

The Federal Committee.

A DECADE ago a small group of enthusiasts conceived the idea that something was lacking in the organization of the British Medical Association in Australia. The Branches were detached from one another; the methods employed to further the objects of the Association differed in the different States; the influence exercised by one Branch was not the same as that exercised by another. It will be recalled that in the year 1880 individual endeavour had resulted in the establishment and recognition of Branches of the British Medical Association in New South Wales, Victoria and South Australia. Fourteen years later the Queensland Branch was instituted; five years later still a Branch was formed in Western Australia and in 1911 the medical profession in Tasmania made a tardy entry into the great medical organization. Prior to this there had been a Launceston Branch of the British Medical Association. A few years after the three Branches of the British Medical Association had come into being, a proposal was made by Dr. Benjamin Poulton at a meeting of the South Australian Branch that a medical congress should be instituted. The idea immediately found a hearty response and the Council adopted the suggestion as a means whereby the medical profession in the Australian and New Zealand colonies might find common ground. A committee was appointed in the year 1886 and among its members was Dr. W. T. Hayward, the President of the South Australian Branch. The instrument thus created, however, was unsuited for the purpose of knitting together the professison. Its sessions were too infrequent, its organization was too insecure and its objects were too limited. Experience has taught that the honour and interests of the medical profession are best safeguarded by one powerful body, the body that has all the honourable traditions of a representative institution that time, thought and judgement can give it. Local medical societies have come and gone in various parts of Australia, but the Branches of the British Medical Association as parts of the Imperial organization have outlived them all and have gained in strength and importance. It was consequently obvious to the pioneers in the medical profession that the Intercolonial Medical Congress was serving a very valuable purpose in centralizing discussion on scientific subjects, but could not become the means of unifying the medical profession in Australasia. In the year 1896 the need for a closer union of the Branches appears to have been felt. The constitution of the British Medical Association did not admit at that time of the institution of machinery to achieve this end. Consequently the natural experient was mooted, the founding of an Australian Medical Association. Prudence and prevision prevailed. The fundamental idea persisted, but the suggested means of attaining an end was refused. In the year 1900 the same proposal was revived at the session of Congress, when the name was changed into the Australasian Medical Congress. Again it was evident to the majority that the proposal involved a sacrifice and the loss of an ideal. Moreover, it was uncertain whether a new organization, limited to the medical profession in the newly formed Commonwealth, would be strong enough to bind together the scattered elements. Three years later the names of Benjamin Poulton and W. T. Hayward again loomed large in the committees of Congress. Quietly, insidiously, inevitably, the gathering of the forces proceeded. The pioneers led the masses to anticipate a change when the time was ripe. The reconstitution of the British Medical Association soon resulted in an increment of power and influence. In 1908 the suggestion that membership of Congress should be reserved for members of the British Medical Association was brought forward by Dr. Ralph Worrall. Although this idea was not carried into effect for many years, it will be noted that it was destined to survive, because it was founded on the solid conception of imperialism. Three years later Dr. Hayward and a few others found the first step of the solution of the difficulty created by the detachment of the Branches in the establishment of a Federal Committee, which should

be empowered to act in the name of the six Branches of the British Medical Association in Australia. The Federal Committee received recognition from the parent Assocation, notwithstanding that it was probably outside the constitution of the Association. Its powers had to be limited and its activity was necessarily governed by the demands of the several Branches in Australia. At first the Committee did not hold its meetings quite regularly. Experience was needed in order that it might perform its functions effectively and to the full advantage of the Branches. The first chairman was Dr. Hayward, who had for so many years fought for means to unite the medical profession of the several States.

From the records of the meetings of the Federal Committee that have been published in these columns, it will be seen that the time is approaching when the Federal Committee must be provided with more adequate machinery to carry out its functions. The work is increasing rapidly. Within recent times the Federal Committee has undertaken the task of carrying on the Australasian Medical Congress on behalf of the Branches of the British Medical Association in the Commonwealth and in New Zealand. Up to the present the office work has been economically and efficiently done by the Honorary Secretary without the assistance of an organized staff or a properly equipped office. The funds at the disposal of the Committee are quite inadequate for its present and future needs.

Dr. Hayward continued to direct the fortunes of the Federal Committee from its first meeting until the meeting in July, 1921, save when he was serving his country on the other side of the world. His colleagues have recorded their appreciation of his sterling services as chairman of the Committee and their admiration of the manner in which he has tempered mercy with justice in his conduct of the meetings. Under his guidance the Committee has grown in importance and activity. Dr. Hayward has delivered up his office in order that it might be given to the first President of the newly established Congress, Mr. G. A. Syme. The medical profession is indebted to Dr. Hayward for the important part he has played in introducing unity in the medical profession in Australia. The new chairman will take the project a stage further. Under his guidance the work must expand and become increasingly useful. Soon the Committee will be enabled to change its form and recast its internal machinery. In July the Representative Body will consider the proposed alterations of the Articles and By-Laws dealing with the incorporation of the overseas Branches and no doubt these alterations will be adopted. It will then be competent for the Branches to substitute a Federal Council for the Committee. If the members of the Association throughout the Commonwealth follow the proceedings of the Federal Committee with attention, it will be evident to all that there can be no turning back. The Branches must be brought together for their common good and the federal idea must be extended and expanded. Provided that the members stand solidly behind it, the Federal Committee or Council has a future of immense usefulness in store.

The Australasian Medical Congress (British Medical Association).

THE following are the Constitution and Regulations of the Australasian Medical Congress (British Medical Association):

CONSTITUTION.

WHEREAS the institution known as the Intercolonial Medical Congress held scientific meetings in the several Colonies or States of Australia and in New Zealand every third year, commencing in the year 1887, until 1905 and the institution known as the Australasian Medical Congress held similar scientific meetings in the years 1908, 1911, 1914 and 1920, and

WHEREAS at the said meeting held in the year 1920 at Brisbane a referendum of the members of the Congress was taken on the following question, namely:

> "Are you in favour of the abolition of the Australasian Medical Congress as at present constituted, in order that opportunity may be given of establishing Congresses of the Australian Branches of the British Medical Association?"

and the result of the voting thereon was in the affirmative and

THEREUPON the following resolution was unanimously passed, namely:

> "That the Executive of the Congress be empowered to wind up the affairs of the Eleventh Session of the Australasian Medical Congress and hand over to the Federal Committee of the British Medical Association surplus funds (if any) after the expenses of the Congress have been met, such

funds to be passed on for the use of the future Congresses of the British Medical Association."

AND WHEREAS at a meeting of the Federal Committee of the British Medical Association in Australia held on February 1, 1921, the following resolutions were passed, namely:

(1) "That steps be taken to establish a Medical Congress in accordance with the resolution of the Federal Committee of February 4, 1920, as follows:

"'That steps be taken by the Federal Committee to organize British Medical Association Medical Congresses to come into operation upon the winding-up of "The Australasian Medical Congress," such Congresses to be undertaken by the Federal Committee on behalf of the Branches in Australia collectively, the New Zealand Branch being invited to cooperate.'"

(2) "That the name of the British Association Congress be 'THE AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).'"

(3) "That the objects of the Congress be made to conform generally, *mutatis mutandis*, to those of the Annual (Scientific) Meeting of the British Medical Association."

(4) "That the Australasian Medical Congress (British Medical Association) First Session be held in 1923."

IT IS HEREBY RESOLVED by the Federal Committee that:

IN accordance with the powers conferred on it by its Constitution [Constitution: Clause 4 (*e*); and British Medical Association Memorandum of Association: Clause 3 (2)], the Federal Committee shall arrange for the holding of periodical scientific Conferences (in which the New Zealand Branch shall be invited to cooperate), to be called "Meetings" or "Sessions" of "The Australasian Medical Congress (British Medical Association)" for the purpose of receiving addresses or other communications relating to the medical or allied sciences and discussing subjects pertaining thereto. Such conferences shall be held at least once in every three years at such places and at such times at the Federal Committee shall determine: and may be held alone or in conjunction with any scientific body or bodies. For the more convenient consideration of the subjects to be discussed thereat, provision shall be made for them to be considered in Sectional Meetings. And the Federal Committee shall make Regulations governing the organization and conduct of the Sessions of the Congress and shall appoint Patrons, a President and Vice-Presidents of the Congress for each Session thereof.

NOTE.

Federal Committee Constitution: Clause 4 (e): "It may on behalf of the Branches of the British Medical Association collectively in Australia carry out within Australia any of the objects for which, in accordance with its Memorandum of Association, the British Medical Association is or may be established, and may use any means authorized by such Memorandum of Association for the attainment of any such object."

British Medical Association Memorandum of Association: Clause 3 (2): "The objects for which the Association is established are: . . . (2) To hold or arrange for the holding of periodical meetings of the members of the Association and of the medical profession generally."

REGULATIONS.

Periodicity of Sessions.

1. Sessions of the Australasian Medical Congress (British Medical Association) shall be held every year, every second year or every third year, as the Federal Committee shall from time to time determine.

Place of Meeting.

2. The Federal Committee shall determine at what place each Session of Congress shall be held; and, for this purpose, shall from time to time receive invitations from the several Branches of the British Medical Association in Australia or the New Zealand Branch to arrange for Sessions to be held at specified places in their respective areas.

Organization and Conduct of Sessions.

3. (*a*) In inviting the Federal Committee to arrange for a Session of Congress to be held at a particular place, the members of the Branch of the British Medical Association in whose area the place is situated, shall be deemed to offer to undertake the organization and management of the Session, subject to the approval of the Federal Committee and subject to such financial assistance for organization and business management as the Federal Committee may provide from accumulated funds (if any) of the Australasian Medical Congress (British Medical Association) in its possession.

(*b*) When an invitation from a Branch of the British Medical Association to arrange for a Session of Congress to be held at a particular place shall have been accepted by the Federal Committee, steps shall be taken forthwith to proceed with the work of organizing the Session, such work to include

(1) The nomination by the Branch of the President of Congress for appointment by the Federal Committee.

(2) The formation by the Branch of a General Committee of Congress, with power to add to its numbers, which may include people of importance in the locality. The President of Congress, the Honorary (local) Treasurer and the Honorary (local) Secretaries of Congress, the Chairman and Honorary Secretaries of all Committees, the Honorary Secretaries of all the Sections, Past-Presidents of Congress and Past-Presidents of Sections (if any) residing in the locality, the members of the Federal Committee for the time being representing the Branch therein shall be members of the General Committee *ex officio*.

(3) The formation by the General Committee of an Executive Committee, a Finance

Committee and such other committees as may be thought necessory. Provided that authority may be given by the General Committee to the Executive Committee to form committees in addition to, but not inconsistent with, those formed by the General Committee.

(4) The ascertaining by the Executive Committee of a suitable date to be fixed by the Federal Committee for the Inaugural Meeting of Congress.

(5) The determination by the Executive Committee of the Sections to be organized, together with their titles and scope of their work.

(6) The appointment by the Executive Committee (upon suggestions received for the purpose from the Councils of the several Branches of the British Medical Association) of Presidents and Vice-Presidents of the several Sections.

(7) The appointment by the Executive Committee (upon suggestions received for the purpose from the Councils of the several Branches of the British Medical Association) of a member of the British Medical Association in each State of the Commonwealth of Australia to be an Honorary (local) Secretary of Congress for such State and two members of the Association in New Zealand, one for the North Island and one for the South Island, to be Honorary (local) Secretaries of Congress for the two islands respectively.

Membership.

4. (*a*) Every member of any Branch of the British Medical Association in Australia or of the New Zealand Branch shall be entitled to be a member of Congress for any Session thereof upon his own application in writing to the Executive Committee and without election upon payment to the Executive Committee of the prescribed membership subscription.

(*b*) A legally qualified medical practitioner who is not a member of the British Medical Association, may be elected to be a member of Congress by the Executive Committee thereof in respect of whom the following requirements shall have been fulfilled, namely:

(1) He shall have been nominated in writing by two members of Congress who are members of the British Medical Association and his nomination shall have been published in THE MEDICAL JOURNAL OF AUSTRALIA.

(2) He shall have applied in writing to the Executive Committee for admission as a member of Congress.

(3) He shall have forwarded to the Executive Committee for acceptance the prescribed amount of the subscription.

(4) He shall have satisfied the Executive Committee that he is not ineligible for membership of any Branch of the British Medical Association and that he has reasonable ground for not applying for admission or re-admission to the Association, as the case may be.

(5) No objection in writing to his admission as a member of Congress shall have been received in due course from the Council of the Branch in whose area he resides, notification of his application for admission having been duly given in writing by the Executive Committee to such Council.

Honorary Membership.

5. Honorary members, not necessarily medical practitioners, may be nominated by the Executive Committee for appointment by the Federal Committee.

Date of Meeting.

6. The Sessions of Congress shall be held at such times as the Federal Committee shall determine.

Patrons.

7. The Patrons of Congress shall be such distinguished persons as may accept the position on the invitation of the Federal Committee.

President.

8. The President of Congress shall be appointed from time to time by the Federal Committee on the nomination of the Branch of the British Medical Association in whose area it shall have been arranged that the next Session of Congress shall be held. In the ordinary course he shall hold office until the end of the Session in respect of which he was appointed. Provided that he shall retain any position as chairman or member of any committee of Congress held by him in virtue of his office as President of Congress.

Vice-Presidents.

9. The following, subject to their acceptance of the position, shall be appointed by the Federal Committee to be Vice-Presidents of Congress, namely: The Past-Presidents of Congress [Intercolonial Medical Congress, Australasian Medical Congress, Australasian Medical Congress (British Medical Association)], the Director of Naval Medical Services, the Director-General of Army Medical Services and the Director-General of Health of the Commonwealth of Australia, the Director-General of Naval Medical Services, the Director-General of Army Medical Services and the Director-General of Health of the Dominion of New Zealand and a representative of each Branch of the British Medical Association in Australia and New Zealand chosen by the Council of the Branch.

Honorary Secretary and Honorary Treasurer.

10. (*a*) The Honorary Secretary or Secretaries of Congress shall be appointed by the General Committee or, failing such appointment, by the Executive Committee.

(*b*) The Honorary Treasurer of the Congress shall be appointed by the General Committee or, failing such appointment, by the Executive Committee.

Subscription.

11. The membership subscription for any Session shall be £2 2s., unless otherwise determined by the

Federal Committee with the advice of the Executive Committee.

General Meetings.

12. (*a*) The proceedings of each Session of Congress shall commence with the Inaugural General Meeting. Patrons and honorary members shall be invited to attend and such other persons shall be admitted as the Executive Committee may determine. The Inaugural Meeting shall be arranged and regulated by the Executive Committee. It shall be of a ceremonial character and for the purpose of declaring the Congress open and for the delivery of the President's Address. The only other speakers shall be those designated by the Executive Committee.

(*b*) Other General Meetings of members of Congress may be arranged by the Executive Committee for the hearing of addresses by distinguished members of Congress and of addresses, if any, of Presidents of Sections which the Executive Committee shall have decided shall be delivered before a General Meeting instead of before the particular Section immediately concerned or before a group of Sections.

Sectional Meetings.

13. (*a*) Sectional Meetings shall be arranged by the Executive Committee for such branches of medical and allied sciences as shall have been determined by it.

(*b*) There shall be for each Section a President and one or more Vice-Presidents, who shall be appointed by the Executive Committee after obtaining suggestions for such appointments from the Councils of the several Branches of the British Medical Association in Australia and New Zealand; and one or more Honorary Secretaries shall also be appointed by the Executive Committee.

(*c*) A meeting of any group of two or more Sections may be arranged by the Executive Committee, either for the hearing of an address of a President of a Section which the Executive Committee shall have decided shall be delivered before such group instead of before the particular Section of which he is the President, or for any discussion or other work in which such Sections shall have a common interest.

(*d*) Notice of all papers and exhibits to be presented at any Sectional Meeting shall be received by the Honorary General Secretary or Honorary Secretary of the Section not less than sixty days before the Inaugural Meeting of Congress. The Executive Committee may refuse to accept any paper or exhibit. In cases of emergency, when due notice has not been given, the President of the Section may accept papers or exhibits.

(*e*) The text of remarks introducing a discussion and any paper that may be accepted and read, shall be the property of the Federal Committee and shall not be published without the sanction of the Executive Committee, except in a special volume of *Transactions of Congress* or in THE MEDICAL JOURNAL OF AUSTRALIA. No paper shall be taken as read. Unless a paper is read it shall not form part of the proceedings of Congress.

(*f*) All papers and reports submitted to any Sectional Meeting shall be handed to the Honorary Secretary of the Section before the close of such meeting.

(*g*) No vote of thanks shall be proposed to any author of any paper or address.

(*h*) The President of a Section shall be the Chairman of any meeting thereof or, in his absence, the Vice-President whose name is highest in the list of Vice-Presidents shall be the Chairman. Where no Vice-President is available the meeting shall elect a Chairman.

(*i*) Rules for Discussions (Sectional Meetings):

(1) A complete typewritten copy of the paper of the opener of a discussion shall be in the hands of the Honorary Secretary of the Section not less than thirty days before the date fixed for the Inaugural Meeting of Congress.

(2) There shall be a time limit for speakers and readers of papers, namely, twenty minutes for the opener of a discussion, whether the opening be by a speech or by reading a paper, and seven minutes for others taking part in the discussion, by reading papers or otherwise.

(3) No member shall be allowed to speak more than once in any discussion except in reply to a question put by the Chairman or by consent of the meeting.

(4) The opener of a discussion shall be allowed five minutes to reply.

(*j*) Resolutions of Sectional Meetings: If it appears to any Section that action should be taken in connexion with any matter which has been the subject of discussion at its meeting, any proposal for such action shall be referred to the Federal Committee and shall not be published in the lay press.

Museum.

14. There shall be a medical museum in connexion with each Session of Congress, the organization of which shall be the function of a special committee—the Medical Museum Committee—appointed by the General Committee or, failing such appointment, then by the Executive Committee.

Trade Exhibition.

15. The organization of an exhibition of medical and surgical, hospital, ambulance, nursing and other instruments and appliances, pharmaceutical products, foods, biological and bacteriological apparatus, books and other publications of scientific interest, should, if possible, be undertaken by the Executive Committee or a committee specially appointed by the General Committee or by the Executive Committee, the Australasian Medical Publishing Company, Limited, being invited to co-operate.

Final Meeting of the General Committee.

16. The General Committee shall hold a final meeting as soon as possible after the end of any Session to receive the final reports from the several committees and a duly audited statement from the Finance Committee and shall then forward such statement, together with any surplus funds, to the Federal Committee to hold in trust for the Australasian Medical Congress (British Medical Association).

Abstracts from Current Medical Literature.

DERMATOLOGY.

Multiple Lymphangiomatous Tumours of the Skin.

EDWARD OLIVER (*Archives of Dermatology and Syphilology*, May, 1921) in an article on multiple lymphangiomatous tumours of the skin records the case of a Greek, 48 years of age, who complained of pain in the abdomen, dizziness and a cutaneous eruption on the hands, one forearm and one foot. The condition had been present for two years. A year prior to the eruption he had been burnt on the back of the hand with molten iron, to which event the patient ascribed the eruption. A general medical examination disclosed no definite organic involvement, but the patient's blood responded to the Wassermann test. The skin condition consisted of bluish red tumours, lipomatous in appearance, which disappeared on pressure and returned when the pressure was removed. The cutaneous covering appeared to be thicker and harsher than the normal skin. On the dorsal surface of the left hand eighteen to twenty of these swellings were apparent, varying in size from a split pea to a hazel nut. Both forearms disclosed a chain of hard, shotty tumours, varying in size from that of a split pea to that of a cherry. The skin covering them was normal and, although they were visible to the naked eye, they were not markedly elevated. On incision they were found to be cystic. Microscopical examination showed that the epidermis was atrophied, the atrophy involving especially the *stratum mucosum*. The *stratum corneum* was hypertrophied and separated from the granular layer by clear cyst-like spaces. The nuclei of the prickle cells were atrophied and there was a considerable amount of vacuolation. The upper layer of the corium was composed of densely packed connective tissue cells, which extended down into the deeper layers and enclosed small capillaries, which appeared to increase in size as the deeper layers were reached. These were made up entirely of large and small cysts lined with flat endothelial cells with a round nucleus. There exist three types of cutaneous lymphangioma. The first type is lymphangioma of the papillary body. It appears in two forms—the one purely superficial and the other vesicular in appearance, but associated with a deep lymphangioma. The second type is lymphangioma of the hypoderm, an example of which is *lymphangioma tuberosum multiplex*, while the third is lymphangioma of the subcutaneous vessels, which is mainly congenital. The author claims that his case is one of lymphangioma of the hypoderm. He quotes several cases reported by different authors, all of whom appear to agree in regard to the main characteristics of this, *e.g.*, the colour, size and compressibility.

Focal Infection.

H. LESLIE ROBERTS (*British Journal of Dermatology and Syphilis*, October, 1921) has discussed the relationship of focal infection to certain dermatological affections. Of two cases of *lichen planus*, one was associated with tonsillar infection and the patient made a speedy recovery after tonsillectomy had been performed. The second patient showed no oral, tonsillar or nasal infection and recovered slowly under local treatment. Of eleven patients suffering from *alopecia areata*, five were discovered to have bacterial collections in the tonsillar crypts, while six had apparently healthy tonsils. Of the five with infected tonsils, three submitted to tonsillectomy, the results of which were good in two instances. Of four patients with marked bacterial crypts, two could boast a vigorous growth of scalp hair, one had pityriasis and one *seborrhœa capitis*. An almost pure growth of *Streptococcus longus* was obtained from one of the boys who had strong hair. An almost pure growth of *Streptococcus longus* was obtained on culture from the bacterial collections in the tonsillar crypts of a patient who was the subject of psoriasis, but tonsillectomy aggravated rather than inhibited the disease. Tonsillectomy also failed to affect a case of *status eczematicus* in a patient whose tonsils yielded a mixed growth of *Staphylococcus aureus* and *Streptococcus longus*. One case of prurigo was associated with a mixed bacterial collection in the tonsillar crypts. Treatment of the patient with tonsillectomy and autogenous vaccination was followed by a brilliant result. The author distinguishes between bacterial collections in the crypts and general infection of the tonsils. He concludes from the observations of H. W. Barber and himself that *lupus erythematosus* is in some cases associated with oral or tonsillar bacterial collections, the prevailing bacterium being the *Streptococcus hæmolyticus*, and that it may spontaneously disappear after tonsillectomy or after tonsillectomy and a series of injections of autogenous vaccines. *Lichen planus* may begin to resolve after tonsillectomy or concurrently with a series of injections of an autogenous streptococcal vaccine, but psoriasis is not affected by these modes of treatment. The effect on *alopecia areata* is similar to that on *lichen planus*.

Lupus Pernio.

F. PARKES WEBER (*British Journal of Dermatology and Syphilis*, June, 1921) describes a remarkable condition of the face, hands and feet of a boy of two and a half years. He suggests that the lesions of the hands and feet might be described as "*acrodermatitis chronica mutilans*." The cheeks and chin showed extreme redness and occasionally lividity. The cheeks were the site of fine, hair-like, superficial telangiectases and were slightly thickened and infiltrated. The edges of the aural pinnæ were hyperæmic and scaly. The bridge of the nose was depressed and there was ozæna, with an offensive muco-purulent discharge. The arms and legs showed reticular mottling, sometimes red, sometimes livid. The hands were mutilated, the tips of some of the fingers having been lost by gangrene or ulceration. The feet were swollen and either red or livid, like the hands, and in the sole of each foot was a chronic ulcer with irregular edges. Examination of the organs revealed no abnormality and the blood count was not abnormal. Skiagrams of the hands showed loss of some of the phalanges and small areas of imperfect calcification or of decalcification such as have been noticed in cases of *lupus pernio*. Microscopical examination of a small piece of tissue removed from the edge of the chronic ulcer on one foot revealed a permeation of the corium with lymphocytes, plasma-cells and fibroblasts. No giant cells and no tubercle bacilli were discovered. The blood serum of both the patient and his mother failed to respond on two occasions to the Wassermann test. The disease more nearly resembles *lupus pernio* than any other condition. It has also been suggested that it may be an exaggerated example of the condition in very young children to which Swift and Wood, in Australia, have given the name "erythrœdema."

Treatment of Skin Diseases by Ultra-Violet Light.

A. E. SCHILLER (*Urologic and Cutaneous Review*, May, 1921) advocates the use of the ultra-violet rays in the treatment of skin disease. He briefly outlines the history of light as a therapeutic agent from the time of the early Egyptians, Greeks and Romans to the present day. In 1796 the University of Göttingen offered a prize for the ablest essay on the effect of light on the human body. In 1877 ultra-violet light was shown to have a marked germicidal power. In 1896 Finsen published a report on the treatment of *lupus vulgaris* by means of the ultra-violet rays and since that time Hewitt's mercury arc light, the Kromayer lamp and other inventions have been extensively used. In the author's belief the ultra-violet rays rank with the X-rays, radium and carbon dioxide in their usefulness in the treatment of skin diseases. The ultra-violet rays have an irritant action on the epidermis (causing exfoliation), a bactericidal action and a sedative action on the cutaneous nerves. In a series of cases treated he used the Kromayer lamp and the Alpine sun lamp and the therapeutic effect depended upon the time and pressure in the Kromayer lamp and the time and distance in the Alpine sun lamp. Superficial lesions demanded less time than those involving deeper structures and fair people required less than dark. The primary reaction is an erythema. The author claims that he has already successfully treated by this method acne, seborrhœa, psoriasis, tinea, septic skin conditions and alopecia.

RADIOLOGY.

Radium and Uterine Cancer.

W. S. STONE (*Surgery, Gynecology and Obstetrics*, June, 1921) attempts to clear up some points in regard to the treatment of uterine cancer by radiation. Uterine cancer tissue responds to radiation in the same manner as tumour tissue elsewhere, the embryonal and rapidly growing types responding more quickly than the glandular and epithelial types. Tumour cells of cellular type disappear entirely, the rate depending on the dosage, filtration and distance from the tumour, while in the less cellular types they are replaced by soft and supple fibrous tissue. In treatment it is essential completely to filter the softer rays, since otherwise the surrounding tissues may be seriously damaged. Radium produces better results in all cases of recurrence after operation than does further surgery. Even in very advanced cases great relief is given and pain and hæmorrhage is banished and the rate of growth of the tumour greatly diminished. The author also favours the burying of radium or radium emanation in the tumour or affected parts. As a rule, uterine cancer is inoperable when diagnosed, the mortality from operation is far greater than from radiotherapy and the ultimate radium result is superior to the surgical. With proper dosage radium may be expected to destroy all intra-uterine tumour tissue and it is also capable of destroying extra-uterine tissue to a depth fully as great as is possible by the widest excision. The author also advocates a heavy radiation prior to any surgical procedure. It is not yet decided whether long dosage with small quantities of radium produces any different effect to short doses with large quantities. The former produces less vesical and rectal irritation. Overdosage must be guarded against, as it destroys the nutrition of the surrounding parts and delays healing.

Appendix Radiography.

CHARLES EASTWOOD (*Medical Record*, October 15, 1921) discusses the Röntgenographic diagnosis of pathological appendices. He prefers the term pathological to chronic appendicitis, as the latter really denotes an existing inflammatory condition, while the former merely means that the appendix has at some past date been the site of an inflammatory lesion. Fluoroscopic examination is of great use in examination of the appendix, as it is possible to watch the effect of palpation and position. About 90% of appendices may be visualized, if a meal of barium sulphate in buttermilk is used. Observations are made six, twenty-four and forty-eight hours after taking the meal and in the examination the following points are noted: stomach residue, ileal residue, shape and position of the terminal ileum and caecum and appendix. Attempts are also made to move the appendix by palpation. If the appendix is adherent, attempts at moving it cause pain. The normal appendix presents a uniform outline and diameter. It is freely mobile, is not tender to pressure and shows no sharp kinks. It should be empty when the caecum empties. Defective filling of the lumen points to the presence of concretions. The abnormal appendix may be fixed along its course or at its tip and is tender to palpation and often retains its contents long after the caecum is empty. Adhesions of the terminal ileum and caecum point to an antecedent appendicitis. The exact position of the appendix can be demonstrated before operation and this knowledge is of great help to the surgeon.

Cardiac Studies.

CHARLES MARTIN (*American Journal of Roentgenology*, June, 1921) describes a series of tracings of teleröntgenograms of the hearts of patients suffering from cardiac disease. Both fluoroscopic and Röntgenographic methods are employed and the teleröntgenograms are taken at a distance of two metres from the target and the tube is centred on a line about five centimetres above the lower scapular angles. After development the Röntgenogram is marked off into various anatomical divisions by means of a soft pencil and the length and breadth of the heart are calculated rapidly. As in a Röntgenogram at this distance, the heart shadow is practically the natural size. The heart is considered to be enlarged when the transverse diameter exceeds half the transverse intra-thoracic diameter. This opinion is based on the examination of a great number of hearts by the author and other observers. The hypoplastic heart is generally not organically diseased, even though murmurs be present. Pericarditis, with or without effusion, is always difficult to diagnose. With effusion, the heart shadow has a "water-bottle" appearance and the shadow varies in outline when the patient is recumbent (this does not occur in acute dilatation). Pulsation is also absent or feeble and the posterior mediastinal space is obliterated. If the left border of the heart does not move about 3 cm. on deep respiration, pericardial adhesions are present and in such cases the left margin of the shadow is straight and the normal curves are absent. Diagrams of various conditions are used to illustrate the article.

Bone Atrophy.

NATHANIEL ALLISON AND BARNEY BROOKS (*Surgery, Gynecology and Obstetrics*, September, 1921) report a series of experiments on atrophy from disuse occurring in bones. They also describe the radiographic appearances of these bones. It has often been noted that certain atrophic changes occur when an extremity is not used, whether such enforced rest is due to injury, paralysis or disease. The changes have been attributed to the direct effects of trophic influences or inflammatory changes and the result of these changes is that the bone becomes more permeable to X-rays and more fragile. The earliest changes take place in the cancellous ends, the shadows of the trabeculæ becoming less defined, while in some areas they may disappear entirely. Later there is marked change in the compact bone, with definite decrease in diameter of the shaft and an increase in size of the medullary canal. After 100 to 300 days the trabeculæ are still well defined but are small and decreased in numbers, while the compact bone of the shaft is greatly thinned and shows longitudinal striæ. These striæ indicate the fact that the bone has become more porous. In addition to these intimate changes, the authors noted that the epiphyseal ends were less affected than the diaphysis and that the contour of the bone generally was little affected.

Syphilis of the Lung.

WARNER WATKINS (*American Journal of Roentgenology*, May, 1921) devotes an article to the description of syphilitic and tuberculo-syphilitic infections of the lungs. The lesions investigated were gummata and inflammatory infiltration in recent cases and interstitial peribronchial fibrosis and dense fibrosis with pleural thickening in older cases. Numerous illustrations are given. In a discussion on this paper, Dunham advises the exercise of caution before a Röntgenological diagnosis of syphilis is made. He states that it is his custom to issue a report to the effect that certain abnormal densities are present, which only suggest syphilis and are not diagnostic. Even a response by the blood to the Wassermann test does not prove that the lung shadows are due to syphilis. Hitherto it has not been possible to demonstrate spirochæates in the lung lesions. When the tuberculin reaction is not obtained and the shadows clear up under anti-syphilitic treatment, such shadows may reasonably be considered to have been syphilitic.

Perthes's Disease.

D. B. PHEMISTER (*Surgery, Gynecology and Obstetrics*, July, 1921) records an interesting case of Perthes's disease. The patient was operated on and the pathological changes in the head of the femur and hip-joint determined. The patient was ten years old and had the usual signs and symptoms of the disease, with the usual absence of pain. Röntgenograms showed flattening and cavitation of the head of the femur, but, as the condition progressed, a second examination after four months showed a further collapse of the centre of ossification and of the femoral head, while apparently two small sequestra were present. The hip-joint was opened and a straw-coloured and villous formation found. A window was then cut into the femoral head and a cavity filled with granulations, together with some necrotic débris and sequestra, found. The cavity was curetted, but bacteriological examinations were negative, while histologically a chronic synovitis with sequestra was reported. Five months later the joint had returned to normal.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch was held at the B.M.A. Building, 3034, Elizabeth Street, Sydney, on November 25, 1921, DR. FOURNESS BARRINGTON, the President in the chair.

Iso-Agglutinins.

DR. A. H. TEBBUTT, D.S.O., read a paper composed by himself and MISS S. V. MCCONNEL, entitled "Studies in Iso-Agglutinins" and illustrated his remarks with a large number of lantern slides (see page 201).

DR. A. W. HOLMES À COURT said that they were much indebted to Dr. Tebbutt for the care and trouble with which he had carried out his very interesting researches. He considered that the explanation of incompatibility between the blood of a potential donor and that of the recipient was not only of theoretical interest, but was of great practical importance. He regarded is as unfortunate that the nomenclature had become confused. He agreed with Dr. Tebbutt in accepting the grouping of Jansky. Dr. Holmes à Court referred to the medico-legal aspect of this work. An attempt had already been made in the American courts to determine questions of legitimacy from the evidence adduced from the group of the parent's blood and the blood of the infant.

DR. F. A. MAGUIRE, D.S.O., thanked Dr. Tebbutt for his clear demonstration and stated that they owed him a very great deal for having worked at this interesting and difficult subject. He recognized the importance of transfusion of blood of infants up to one month of age. In many cases it would be a great therapeutic gain to be able to use the mother's blood with impunity. It had been held up to recent times that there was no incompatibility during the first month of the child's life. Dr. Maguire was very gratified to learn from Dr. Tebbutt the probable factors which contributed to this incompatibility.

DR. FOURNESS BARRINGTON thanked Dr. Tebbutt in the name of the meeting for a very clear exposition of a fascinating subject.

In his reply DR. TEBBUTT stated that the medico-legal aspect of incompatibility had been investigated by Schütze, who had worked at the subject at the Lister Institute, but as far as he was aware no forensic use had been made of the facts elicited. He had shown that four months after a blood stain had been dried, the group to which this blood belonged, could be determined.

In reply to Dr. Maguire, he stated that at first it had been thought that the agglutinating substances were associated with disease processes. It had been definitely proved, however, that this was not so, at any rate qualitatively.

Bone Grafting.

DR. H. R. G. POATE read a paper on bone grafting (see page 209).

DR. J. MORTON expressed his great interest in Dr. Poate's paper. Referring to the question whether bone was formed from periosteum or from bone, he called attention to the fact that in osteo-myelitis the whole of the bone was killed; regeneration took place by the formation of an involucrum. He was surprised to hear from Dr. Poate of the objection to the use of intra-medullary grafts. He, the speaker, had had satisfactory results with them. He employed a twin saw for the cutting of the graft and used a special technique. The mechanical fixation was very perfect, no matter whether the graft threw out new bone or not. He defended the use of electrically driven saws. In conclusion, Dr. Morton asked Dr. Poate what treatment he would advocate in the following case: Ten or twelve years previously the tibia of a boy had been fractured as a result of slight violence. The bone had become bent and had given considerable trouble. After two or three attempts at grafting he had succeeded in obtaining good fixation. The bone, however, had again been fractured and a great deal of difficulty had been experienced in attempting to get good alignment and fixation. He suggested that it might be advisable to use a graft from the other tibia.

DR. D. J. GLISSAN, M.C., stated that Wolff's law was one of the most important axioms that had been established in surgery. The question under discussion turned largely on the application of this law. Union of a fracture, particularly in young subjects, might occur without accurate alignment and in many cases under the operation of this law the contour of the bone might be restored. Dr. Glissan held that the bone should come into function as soon as possible during and after the repair. The muscles could be exercised while the joints were still immobilized. It was muscle action which determined largely the architecture and structure of the bone.

Dr. Glissan agreed with Dr. Poate that intra-medullary grafts were unsound. When good results were obtained, they were largely due to the efficient splinting which this method sometimes provided. When eburnated bony ends could not be wholly removed in preparing the graft bed, it was often good practice to drill them through in various directions down to normal bone to allow of the movement of bone repair cells. He thought that more reliance should be placed on active movement, which should be carried out at the earliest possible moment. In conclusion, he referred to a case of grafting which had been dealt with at Liverpool, in England. The graft had broken down and had presented at the wound; it was movable in a purulent fluid. Before the loose graft was removed, a skiagram was taken and it was seen that a well-marked layer of endosteal bone was totally bridging the gap. The graft was left untouched and repair proceeded.

DR. P. FIASCHI, O.B.E., congratulated Dr. Poate on his interesting paper and brilliant results. He regretted, as others probably did, that Dr. Poate had been unable to present his results at the Congress at Brisbane along with those that had been read, particularly that of Dr. F. A. Hadley, of Perth. Dr. Fiaschi asked Dr. Poate if he had made use of the lateral graft. Dr. Hadley had shown some very fine end results. He wished to call attention to the method adopted a number of years ago by his father in a patient presented to the New South Wales Branch. The case had subsequent been recorded in the *Australasian Medical Gazette*.

DR. POATE, replying to Dr. Morton, suggested that his patient probably had a pathological bone diathesis. It would be informative if a microscopical examination of the bone were made. For a case such as this a graft from the opposite tibia, fashioned according to Albee's method, should be the best means of treatment. He did not regard the graft described by Dr. Morton as a true intra-medullary peg. Had he followed up the cases with X-ray control he would have found absorption in from eight to ten weeks. He agreed with Dr. Glissan in regard to Wolff's law. He certainly believed in early active movement. In the last place, he stated that in his opinion the method referred to by Dr. Fiaschi was not universally applicable.

MEDICO-POLITICAL.

MEETING OF THE FEDERAL COMMITTEE.

THE FEDERAL COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION IN AUSTRALIA met at the Medical Society Hall, East Melbourne, on February 8 and 9, 1922. MR. G. A. SYME took the chair.

The following representatives were present:

New South Wales Branch: DR. R. H. TODD and DR. J. ADAM DICK, C.M.G..

Victorian Branch: MR. G. A. SYME and DR. R. H. FETHERSTON.

Queensland Branch: DR. W. N. ROBERTSON, C.B.E., and DR. J. LOCKHART GIBSON.

South Australian Branch: DR. F. S. HONE and DR. H. S. NEWLAND, C.B.E., D.S.O..

Tasmanian Branch: DR. GREGORY SPROTT.

Western Australian Branch: DR. E. A. OFFICER.

Apologies for non-attendance were received from DRS. W. W. GIBLIN and E. BRETTINGHAM MOORE (Tasmanian Branch) and from DRS. W. P. SEED and F. A. HADLEY (West-

ern Australian Branch). DR. G. SPROTT attended as substitute for DR. GIBLIN and DR. E. A. OFFICER as substitute for DR. SEED. DR. H. S. NEWLAND acted as proxy for DR. HADLEY.

Office-Bearers.

On the motion of DR. W. N. ROBERTSON, seconded by DR. G. SPROTT, MR. G. A. SYME was unanimously elected Chairman of the Federal Committee in succession to DR. W. T. HAYWARD, C.M.G., whose resignation was received with regret.

MR. SYME thanked the members for the honour they had done him in placing him in the position of trust. He regarded it as a very great honour and at the same time recognized that the responsibility of the position was by no means small. He assured the members that he would do his utmost to discharge his duties in a satisfactory manner.

DR. W. N. ROBERTSON was elected Vice-Chairman on the motion of DR. R. H. FETHERSTON, seconded by DR. F. S. HONE.

MR. G. A. SYME moved and DR. J. A. DICK seconded that DR. R. H. TODD be re-appointed Honorary Secretary and Honorary Treasurer. The motion was carried.

DR. R. H. TODD moved, DR. W. N. ROBERTSON seconded and it was carried that DR. W. H. CRAGO be appointed Honorary Auditor.

Correspondence.

Letters were read dealing with various matters, including the following:

The congratulations of the Federal Committee were conveyed to DR. FETHERSTON on his election to the Legislative Assembly of Victoria. DR. FETHERSTON thanked the Committee for their expressions of goodwill.

DR. W. T. HAYWARD, C.M.G., wrote, asking to be relieved of his position as Chairman of the Federal Committee. Dr. Hayward held the opinion that it would be fitting if the President of the first session of the Australasian Medical Congress (British Medical Association) should be at the same time Chairman of the Federal Committee of the British Medical Association. As Mr. Syme had been nominated for the presidency of Congress and was Vice-Chairman of the Committee, the conditions were favourable for his resignation. He wished to convey to Dr. R. H. Todd, the Honorary Secretary, and to Dr. J. A. Dick, the Acting Honorary Secretary, his grateful thanks for their valuable help and loyal support.

Several further letters between Dr. Hayward and the Federal Committee were read.

MR. SYME referred to the sterling counsels and help which Dr. Hayward had rendered the Committee from its inception and pointed out that it was largely due to Dr. Hayward that the Federal Committee had been instituted.

After other members had expressed their regret that Dr. Hayward had retired from the Committee, it was moved by DR. W. N. ROBERTSON, seconded by DR. H. S. NEWLAND and reseolved unanimously:

> That the Federal Committee desires to place on record its high appreciation of the services of its retiring Chairman, DR. W. T. HAYWARD, C.M.G.. The initiation of the Committee was largely due to his prescience and suggestion and its successful evolution and powerful influence in the counsels of the British Medical Association have likewise been largely the result of his genial nature, tact and knowledge of affairs. He has truly earned the esteem and affection of all his colleagues.

Australasian Medical Congress (British Medical Association).

Election of President.

DR. R. H. TODD reminded the members that at its last meeting the Committee had considered invitations from the Victorian Branch and from the Western Australian Branch to hold the first session of the Congress under the new arrangements in Melbourne and Perth respectively. The representatives of the Tasmanian Branch had recognized the desirability of holding this first session in a large centre and had consequently withdrawn their invitation, albeit with reluctance. Letters had been addressed to the Council of the Western Australian Branch, explaining the position and expressing the hope that a session of Congress would be held a little later in Perth. The invitation of the Victorian Branch had been accepted. At the same time the Council of the Victorian Branch had been asked to nominate someone to fill the office of President. The Council had replied that Mr. G. A. Syme had been nominated.

In the course of a short discussion the opinion was expressed that the choice of the Council of the Victorian Branch had been a singularly happy one and that no more popular member could have been selected.

On the motion of DR. R. H. TODD, seconded by DR. M. N. ROBERTSON, it was resolved:

> That MR. G. A. SYME be appointed the President of the First Session of the Australasian Medical Congress (British Medical Association), Melbourne, 1923.

MR. SYME thanked the Committee for the second and greater honour they had done him that day. He knew that they had an immense amount of work to do to insure the success of Congress. Unless the whole of the medical profession determined to collaborate, all their efforts would be vain. He knew that he would receive the full collaboration of the members of the General and Executive Committees.

Date of the First Session.

A discussion followed in regard to the date of the first session. The first proposal that had been put forward by the Executive Committee had been that the date should be from February 12 to 17, 1923. This date had been chosen because it was the latest date in the University long vacation. Later it had been suggested that for climatic reasons and because many important people might be absent from Melbourne in February, it might be better if the second week in November were chosen. Inquiries had been instituted and it had been learned that this date, although not very convenient, would be suitable for the members of the Medical School at the University of Adelaide. On the other hand, the teachers at the University of Sydney would not be free at that time. Letters had passed between the bodies concerned.

MR. SYME pointed out that the January-February vacation was the only common vacation at present. When the Senate of the University of Sydney carried out the resolutions of the last inter-university conference, a second common vacation would be instituted in May. It was not proposed to hold the session of Congress in May, as the climatic conditions were usually unfavourable.

The advantages and disadvantages were discussed in detail and it was ultimately resolved on the motion of DR. R. H. TODD, seconded by DR. F. S. HONE:

> That the inaugural meeting of the First Session of the Australasian Medical Congress (British Medical Association) be held on February 12, 1923.

Constitution.

DR. R. H. TODD referred to the instruction given by the Federal Committee to a sub-committee on February 1, 1921 (see THE MEDICAL JOURNAL OF AUSTRALIA, February 19, 1921, page 163) to formulate a draft constitution for Congress, to include rules and standing orders. The sub-committee had considered the subject in detail and had endeavoured to give effect to another resolution of the Committee, namely, that the objects of the Congress should be made to conform generally *mutatis mutandis* to those of the Annual Scientific Meeting of the British Medical Association. While he was in England, he had collected much information and many documents concerning the Annual Scientific Meetings and it was largely on this information and these documents that the draft had been compiled. There had been considerable correspondence with Mr. Syme on the subject and he understood that Mr. Syme approved of the clauses as they appeared. Dr. Todd then read the draft "Constitution" and moved that it be received and adopted.

In the course of a debate on the provisions, the question was raised whether the machinery of Congress would enable it to carry out British Medical Association business. It was explained that the Annual Scientific Meeting of the

British Medical Association was constituted in such a manner that it would not conflict with the business of the Representative Meeting or of the Annual General Meeting, which was a statutory meeting. Congress must, therefore, be limited to the consideration of scientific subjects. It could not be given power to undertake any of the duties of the Federal Committee or of a body constituted on lines similar to those of the Representative Meeting or the Annual General Meeting of the British Medical Association. If at any future date an organization analogous to the Representative Body were to be established, it would be necessary to keep it quite distinct from Congress.

A slight verbal amendment was accepted.

Before the motion was put to the meeting, Dr. R. H. Todd proposed that there should be a preamble, setting forth in brief the facts leading up to the establishment of Congress, so that the document would be complete. He submitted a draft preamble which met with the approval of the members. The constitution was adopted (see page 218).

Regulations.

The draft regulations were presented by the Honorary Secretary and each was considered by itself.

The regulations as amended and adopted will be found on page 219.

There was no discussion in connexion with Regulations 1 and 2.

In regard to the first paragraph of the third regulation, dealing with the relation of the Federal Committee and the organization, the draft was presented in the following form:

> (*a*) In inviting the Federal Committee to arrange for a session of Congress to be held at a particular place, the members of the Branch of the British Medical Association in whose area the place is situated, shall be deemed to offer to undertake the organization and management of the session, subject to the approval of the Federal Committee, and to accept the financial responsibility for the same, subject to such assistance as the Federal Committee may provide from accumulated funds (if any) of the Australasian Medical Congress (British Medical Association) in its possession.

After discussion the following amendment was carried:

> That the words "to accept the financial responsibility for the same" be deleted and that the word "assistance' be deleted and the words "financial assistance for organization and business management" be inserted in its stead.

Sub-clause (*b*) of Regulation 3, after full discussion, was adopted in its original form.

MR. SYME asked the Committee to remove paragraph (7) of the same sub-clause as being superfluous, in view of the fact that provision for the appointment of Vice-Presidents of Congress was made in Regulation 9.

The paragraph was accordingly deleted.

The paragraph (9) of the sub-clause (*b*) of Regulation 3 read as follows:

> The appointment by the Executive Committee, if thought desirable, of representatives in Congress of the Commonwealth Government, of the Governments and of the capital cities of the several States of the Commonwealth and New Zealand and of Universities in the Commonwealth, New Zealand and elsewhere and of scientific associations kindred to the British Medical Association.

It was pointed out that in the possible event of an undesirable representative being nominated, it would be embarrassing to the Executive Committee to have to decline to make the appointment.

The paragraph was deleted and the sub-clause, as amended, was then approved.

Regulation 4 was concerned with the conditions of membership. Sub-clause (*a*) as drafted read as follows:

> (*a*) Every member of any Branch of the British Medical Association in Australia or of the New Zealand Branch and every legally qualified medical practitioner not being a member of the British Medical Association who is a whole-time permanent officer in the Public Service of the Commonwealth or a State thereof or the Dominion of New Zealand or whose is a whole-time permanent officer in the Navy or Army or Air Force, shall be entitled to be a member of Congress for any session thereof upon his own application in writing to the Executive Committee and without election upon payment to the Executive Committee of the prescribed membership subscription.

The Honorary Secretary explained that certain highly placed governmental medical officers found that it was inadvisable to remain members of the British Medical Association. The Branches of the British Medical Association stood in friendly relationship with these officials and it was not desired to exclude them from membership of Congress.

In the course of discussion it was pointed out that medical officers holding the positions in question would be eligible for appointment as Vice-Presidents of Congress.

It was determined to delete all the words from "and every legally" down to "or Air Force."

Considerable discussion took place on the expediency of adopting sub-clause (*b*).

It was explained that paragraph (4) was a sufficient safeguard against undesirable persons becoming members of Congress. The sub-clause was adopted.

Regulations 5, 6, 7 and 8 were adopted without prolonged discussion.

Regulation 9 prescribed the persons who should be appointed Vice-Presidents.

The words in the draft "upon their nomination by the Executive Committee" were removed.

Regulation 10 was adopted without amendment.

Regulation 11 read:

> The membership subscription for any session shall be one pound one shilling, unless otherwise determined by the Federal Committee with the advice of the Executive Committee.

In the discussion on this regulation the members exhibited a desire to prevent any financial embarrassment in connexion with any session of Congress.

The words "two pounds two shillings were substituted for the words "one pound one shilling" and the regulation as amended was adopted.

Regulation 12 was adopted without amendment after a short discussion.

The rules governing sectional meetings were embodied in Regulation 13. Sub-clause (*a*) was adopted. Sub-clause (*b*) was adopted after minor amendment. Sub-clauses (*c*) and (*d*) were also adopted. Discussion arose on sub-clause (*e*), which provided for all papers read and the text of all remarks introducing a discussion being the property of the Federal Committee. In the draft sub-clause it was further laid down that the papers and opening remarks should not be published without the sanction of the Federal Committee, except in the *Transactions of Congress* or in THE MEDICAL JOURNAL OF AUSTRALIA.

It was resolved that the word "Federal" be replaced by the word "Executive" in connexion with the sanction for publication in an independent medical journal.

Sub-clauses (*f*), (*g*) and (*h*) were adopted after a minor amendment had been accepted.

Sub-clause (*i*) read as follows:

> (1) An opening paper shall be limited to 5,000 words.
>
> (2) The complete paper of the opener of a discussion shall be in the hands of the Honorary Secretary of the Section not less than sixty days before the date fixed for the inaugural meeting of Congress.
>
> (3) There shall be a time limit for speakers and readers of papers, namely, twenty minutes for the opener of a discussion, whether the opening be by speech or by the reading of the paper, and seven minutes for others taking part in the discussion by reading papers or otherwise.

(4) No member shall be allowed to speak more than once in any discussion, except in reply to a question put by the Chairman.

(5) The opener of a discussion shall be allowed five minutes to reply.

Attention was called to an apparent anomaly in the sub-clause in that no speaker could deliver 5,000 words in twenty minutes. A paper of 3,000 words would occupy approximately twenty minutes. The suggestion was made that a reader might leave out certain parts of his paper, so that the whole reading could be completed in twenty minutes. The full paper could be published in the *Transactions*, provided that it did not exceed 5,000 words.

After further discussion it was resolved that paragraph (1) be deleted.

The opinion was expressed that the papers handed in should be typewritten and as a result the opening words of paragraph (2) of the sub-clause were amended to read: "A complete typewritten copy of the paper" . . . It was also resolved that thirty days would be a sufficient intervals before the beginning of the Congress for the papers to be in the hands of the Honorary Secretary.

The words "or by consent of the meeting" were added to the end of paragraph (4).

The sub-clause as amended was approved. Sub-clause (*j*) was also approved.

In a short discussion on Regulation 14 it was pointed out that the term "medical museum" had been substituted for the more usual term "pathological museum" in order to widen the scope of the museum. The clause was adopted.

The last regulation, Regulation 15, dealing with trade exhibitions, was also adopted. It was pointed out that the cooperation of the Australasian Medical Publishing Company, Limited, was sought on account of the experience of those connected with the management of THE MEDICAL JOURNAL OF AUSTRALIA in dealing with business firms likely to take space in the trade exhibitions of Congress.

On the motion of DR. F. S. HONE, seconded by DR. H. S. NEWLAND, the following additional regulation was accepted:

> The General Committee shall hold a final meeting as soon as possible after the end of any session to receive the final reports from the several committees and a duly audited statement from the Finance Committee and shall then forward such statement, together with any surplus funds, to the Federal Committee to hold in trust for the Australasian Medical Congress (British Medical Association).

Appointment of Patrons and Vice-Presidents.

The Committee proceeded to appoint the Patrons and Vice-Presidents of the First Session of the Australasian Medical Congress (British Medical Association) in accordance with the Constitution and Regulations 7 and 9. It was resolved:

> That the Governor-General of the Commonwealth, the Governor-General of the Dominion of New Zealand, the Governors of the several States of Australia and the Chancellor of the University of Melbourne be invited to accept appointment as Patrons of the First Session of the Australasian Medical Congress (British Medical Association).

The following, subject to their acceptance of the position, were appointed Vice-Presidents of the First Session of Congress: SIR JOSEPH VERCO (President of Congress, 1887), PROFESSOR SIR HARRY ALLEN (President of Congress, 1908), DR. F. ANTILL POCKLEY (President of Congress, 1911), DR. A. C. PURCHAS (President of Congress, 1914), THE HONOURABLE DR. W. F. TAYLOR (President of Congress, 1920), the Director of Naval Medical Services, the Director-General of Army Medical Services and the Director-General of Health of the Commonwealth of Australia, the Director-General of Naval Medical Services, the Director-General of Army Medical Services and the Director-General of Health of the Dominion of New Zealand.

The Honorary Secretary was instructed to invite the Councils of the several Branches of the British Medical Association in Australia and New Zealand to nominate one representative eaech. The Federal Committee authorized the appointment of the nominated representatives as Vice-Presidents.

Organization.

The Honorary Secretary presented a document entitled "Suggestions for the Organization of Sessions of Congress," which had been drawn up as an adaptation of a similar document in use in connexion with the Annual Scientific Meetings of the British Medical Association. He pointed out that this document had been forwarded to Mr. Syme, who had intimated that it had been proved useful to the Executive Committee. He submitted that the document might be amended after the Melbourne session had been held.

Financial Arrangements.

A general discussion took place in regard to the financial arrangements for Congress. In reply to a question the Chairman expressed the view that the financial responsibility for the session of Congress did not reside in the Federal Committee. The following motion was adopted:

> That the money held on behalf of the Australasian Medical Congress (British Medical Association) by the Federal Committee be employed to defray such expenses as the Federal Committee may incur in connexion with the work of organization of the Congress.

Correspondence.

VENEREAL DISEASE.

SIR: In your issue of January 28, 1922, on page 28, you have printed as a remark by Dr. P. Fiaschi: "Dr. Nash was illogical. Why did he not tell the rural Irish that venereal disease was no crime?"

It is not necessary to do so, because, in their eyes, as a result of home education and example, illicit intercourse is so serious a moral crime that it is absolutely taboo amongst them. The punishment for a lapse is social ostracism for either male or female.

I might point out that in no criminal code that ever was or is, civil, military or moral, has venereal disease been set out as a crime. In the British Army it is an offence for a soldier not to report to his commanding officer that he is suffering from venereal disease. The object for a regulation to this effect, is to insure that the soldier shall be sent up for efficient medical treatment. The subject is governed by Clause 18, Paragraph (3) of the *Army Act*.

In every moral code that holds place amongst the advanced races of mankind, fornication is a major crime. In some of the States of the United States of America it is indictable at common law and even by statute.

In Egypt in 1915, when I pointed out to the general officer commanding the forces and to his principal medical officer, that in no clause in the *Army Act* was venereal disease set out as a crime, the fact was at once admitted and thereafter all soldiers so suffering were treated as sick men.

Before one can accept the teachings of Sir James Barrett and of those agreeing with him in regard to prevention of venereal disease, he must be prepared to deny the correctness of the Christian moral code. Christian morality and immorality cannot be separated from the sexual organs, because they are attributes of these organs. Sir James may reply: "But, be practical amongst the sons of men!" To which can be made answer: "When to be practical requires connivance at immorality, no Christian can subscribe thereto."

Is not the crux of the subject compassed by the Mohammetan gibe, so often heard in Egypt: "You Christians do not look after your women!" Can one wonder at this gibe when he has seen the *rendez vous* of the white Christian women, who were brought purposely from the south of Europe to cohabit with the men of the army of occupation? Not one of these women could have entered Egypt if the military authorities had forbidden them.

As a further sign of the decadence of the Christian standard of morality, the Editor of *The British Medical Journal* has in recent issue published letters from laymen in unblusting advocacy of concubinage. When the mind had grasped their meaning, memory with winged haste coursed through the records of the decline and fall of the empires of the past and asked the question: "Have we, the keepers of the sanctity of the people of the British Empire, failed to heed the most important of historical lessons?"

Yours, etc.,
JOHN B. NASH.

Macquarie Street, Sydney, February 6, 1922.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned has been registered under the provisions of the *Medical Act of 1867* as a duly qualified medical practitioner:

METCALFE, ARTHUR JOHN, M.B., 1918 (Univ. Sydney), Townsville.

VICTORIA.

THE undermentioned have been registered under the provisions of Part I. of the *Medical Act, 1915*, as duly qualified medical practitioners:

COTTON, GEORGE REGINALD COPE, M.B. (Sydney), 1908, Ryrie Street, Geelong.

PARSONS, CHARLES WILLIAM, L.S.A. (Lond.), 1882; M.R.C.S. (Eng.), 1883, Derrinallum.

PRYOR, WILLIAM ARTHUR, M.B., B.S. (Adelaide), 1919, c.o. Commercial Bank, 344, Chapel Street, Prahran.

Names of deceased practitioners removed from the Register:

CLARKE, REGINALD MORLEY.

DERAVIN, HUGH ALEXANDER.

MACGILLICUDDY, REGINALD PATRICK.

POULTON, BENJAMIN.

Additional diploma registered:

MITCHELL, LEONARD JOHN COLE, M.D. (Melb.), 1922.

Books Received.

THE CAUSATION OF SEX IN MAN: A NEW THEORY OF SEX BASED ON CLINICAL MATERIALS, by E. Rumley Dawson, L.R.C.P. (Lond.), M.R.C.S. (Eng.); Third Edition, 1921. London: H. K. Lewis & Company, Limited; Demy 8vo., pp. 226, with 21 illustrations. Price: 7s. 6d..

HORMONE THERAPY BY SERA, VACCINES AND DRUGS, by D. Montgomerie Paton, L.R.C.P. *et* S. (Edin.); 1922. London: Baillière, Tindall & Cox; Crown 8vo., pp. 168. Price: 7s. 6d..

PULMONARY TUBERCULOSIS: ITS ETIOLOGY AND TREATMENT, by David C. Muthu, M.D., M.R.C.S., L.R.C.P.; 1922. London: Baillière, Tindall & Cox; Demy 8vo., pp. 381, with 28 plates. Price: 12s. 6d..

Medical Appointments.

DR. W. B. CHAPMAN (B.M.A.) has been appointed to examine and certify in terms of Section 22 of *The Police Act of 1863* of Queensland.

* * * *

DR. C. E. COOK has been appointed Resident Medical Officer at the Brisbane Hospital.

Medical Appointments Vacant, etc..

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xx..

LUNACY DEPARTMENT, VICTORIA: Junior Medical Officers.

MELBOURNE HOSPITAL: Honorary Physician to Out-Patients, Honorary Medical Clinical Assistant and Honorary Surgical Clinical Assistant.

NEWCASTLE HOSPITAL: Vacancies on Honorary Medical Staff.

PLANTATION COMPANY, SOLOMON ISLANDS: Medical Officer.

ROYAL HOSPITAL FOR WOMEN, PADDINGTON: Resident Medical Officer.

ROYAL NORTH SHORE HOSPITAL OF SYDNEY: Vacancies on the Honorary Medical Staff; also Honorary Assistant Pathologist.

THE UNIVERSITY OF SYDNEY: Full-Time Lecturer and Chief Demonstrator in Physiology and Two Half-Time Lecturers and Demonstrators.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Societies' Dispensary Friendly Society Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phœnix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Hampden District Hospital Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 3, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, 6, Bank of New South Wales Chambers, St. George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

FEB. 28.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
MAR. 1.—Victorian Branch, B.M.A.: Branch.
MAR. 3.—Queensland Branch, B.M.A.: Branch.
MAR. 7.—New South Wales Branch, B.M.A.: Ethics Committee; Executive and Finance Committee.
MAR. 8.—Western Australian Branch, B.M.A.: Council.
MAR. 10.—Queensland Branch, B.M.A.: Council.
MAR. 10.—South Australian Branch, B.M.A.: Council.
MAR. 14.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
MAR. 15.—Western Australian Branch, B.M.A.: Branch.
MAR. 16.—Victorian Branch, B.M.A.: Council.
MAR. 18.—Eastern District Medical Association, New South Wales.
MAR. 22.—South Sydney Medical Association, New South Wales.
MAR. 23.—Brisbane Hospital for Sick Children: Clinical Meeting.
MAR. 24.—Queensland Branch, B.M.A.: Council.
MAR. 29.—Victorian Branch, B.M.A.: Council.
MAR. 30.—South Australian Branch, B.M.A.: Branch.
MAR. 31.—New South Wales Branch, B.M.A.: Annual Meeting.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)